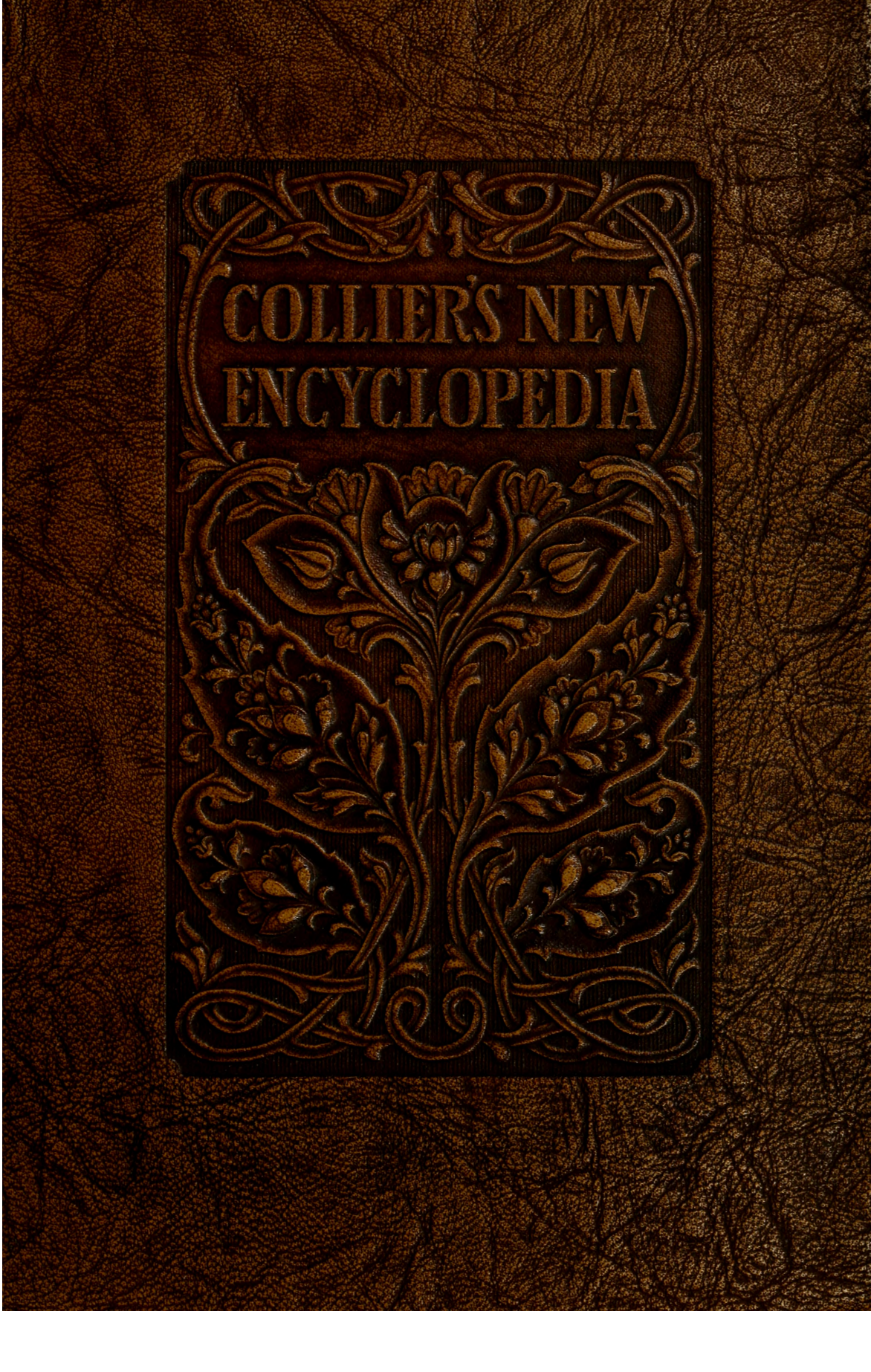

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Castle Garden, the Battery, the Aquarium (once Castle Garden), Tower Building, the Produce Exchange, and the towers of the Woolworth, Singer, and Municipal Buildings and other lofty structures.

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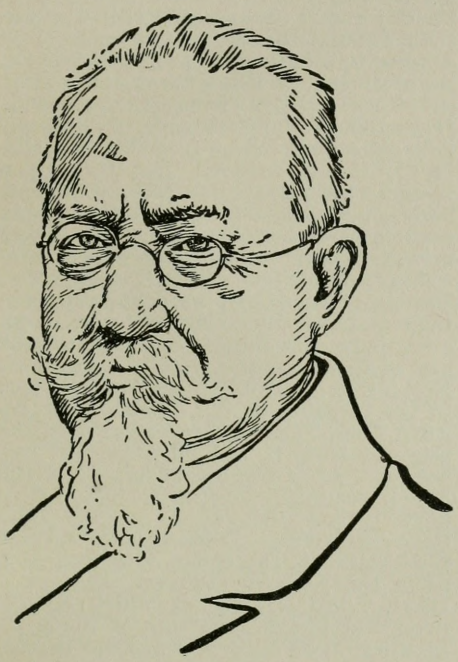
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"LOMB—OCELOT"

LOMBROSO, CESARE (lōm-brō′sō), an Italian scientist; born in Venice, 1836. He attained world-wide celebrity as an investigator of pathology, psychiatry, nervous diseases, criminology, and allied departments of science. His theory of a definite criminal type, the born criminal, is not any longer considered as having been established. His principal works



CESARE LOMBROSO

are: "Researches on Cretinism in Lombardy" (1859); "Genius and Insanity" (1864); "Clinical Studies on Mental Diseases" (1865); "Microcephaly and Cretinism" (1873); "The Criminal" (1875); "Love in Suicide and in Crime" (1881); "The Man of Genius as Related to Psychiatry" (1889); "Female Criminals" (1893); "Anti-Semitism" (1894); "The Anarchists" (1894); "Genius and Degeneracy" (1897); "Crime, Its Causes and Remedies" (1899); "After Death—What?" (1909); etc. He died in 1909.

LOMZA, POLAND, a fortified city, 96 miles N. E. of Warsaw, on the E. bank of the Narev. Pop. about 30,000, a large portion of which is Jewish. It is the center of an agricultural region which produces most of the grain crops. The city and its environs was the scene of several important battles between the Russians and Germans during the struggle for Warsaw.

LONDON, the metropolis of the British empire, and the most populous, wealthy, and commercial city of the world. It is situated partly and principally on the N. bank of the Thames, in the county of Middlesex, and partly on its S. bank in the county of Surrey, its suburbs extending into several other counties, and is about 45 miles above the river's mouth. The site on the N. side is high and dry, but on the S. it is so low as to be under the level of the highest tides, though, by a well-constructed system of drainage, it is kept perfectly free from wet. The sub-soil is a hard clay, known to geologists by the name of "London clay," lying in the middle of the great chalk basin, extending E. from Berks. London comprises, besides the City of London and the city of Westminster, the parliamentary boroughs of Battersea, Bermondsey, Bethnal Green, Camberwell, Chelsea, Deptford, Finsbury, Fulham, Greenwich, Hackney, Hammersmith, Hampstead, Holborn, Islington, Kensington, Lambeth, Lewisham, Paddington, Poplar, Marylebone, St. Pancras, Shoreditch, Southwark, Stepney, Stoke Newington, Wandsworth, and Woolwich. These, formerly distinct, combine to form the huge agglomeration called London. Its length E. from Plumstead, in Essex, to its W. boundary Hammersmith, in Middlesex, on the N. bank of the Thames, may be estimated at 19 miles; its breadth, N. to S., or from Hampstead, in Middlesex, to Camberwell, Surrey county, at 14 miles; while its circumference is not less than 40 miles. The municipal and parliamentary city of London which coincides with the registration city of London has an area of 675 acres, with a population in 1911 of 364,061, compared with 301,384 in 1891. The registration county of London coinciding with the administrative county has an area of 74,816 acres and it coincides very nearly with the collective area of the London parliamentary boroughs. The population of registration London for 1911 was 4,521,685. The estimated population in 1917 was 4,026,911. Included within the limits of London is also the so-called outer ring, comprising a large area of the surrounding country. This had a population in 1911 of 2,729,673 and an estimated population in 1917 of 2,699,852. Including both these areas the population in 1911 was estimated at 7,251,358 and in 1917 at 6,726,763. The N. and S. portions of London are connected by bridges, viz., those of London, Southwark, Blackfriars, Waterloo, Hungerford, Westminster, Vauxhall, Chelsea, Wandsworth, Putney, and Hammersmith, be-

sides several railway bridges. Communication is also maintained subterraneously by the Thames Tunnel and subways. The city is divided into several hundred parishes, and contains about 500 churches belonging to the Anglican communion, irrespective of several hundred others belonging to various denominations. This, the E. central division of the metropolis, may be termed the center of commerce not only of the British empire, but of the world at large. What is legally termed the port of London extends about 7 miles below London Bridge beyond Blackwall; though the actual port, consisting of the upper, middle, and lower pools, does not reach beyond Limehouse. Independent of the river accommodation thus afforded for shipping, a series of vast inland docks extends from the Tower to nearly opposite Greenwich. The port of London comprises that part of the Thames river below Teddington Lock. More than one-third the commerce of the United Kingdom is carried on in the port of London. There is an elaborate system of docks, the chief of which are the Surrey Commercial Docks with an area of 380 acres, the West India Docks, 332 acres, the Royal Victoria and Albert Docks, 1,100 acres and the Tilbury Docks, 596 acres.

The city proper was formerly walled, with large entrances or gates, one only of which—Temple Bar, dividing the cities of London and Westminster—remained till 1877. The noticeable public buildings of the city are the Tower of London; the Royal Mint; St. Paul's Cathedral; the General Postoffice; the Guildhall; Mansion House; the halls of the various livery companies, or trade guilds; the Bank of England (covering 8 acres); Royal Exchange; Stock Exchange; Corn Exchange; Coal Exchange, Custom House; East India House, etc. The city is intersected with railroads both above and below ground. In a radius of one mile round the Bank of England is found, perhaps, the busiest, and certainly, during business hours, the most densely crowded spot on the globe. Proceeding W., and arrived at Temple Bar at the E. extremity of the great thoroughfare, the Strand, we find on the right the Temple, with its beautiful gardens extending to the river's edge, and on the left the other great Inns of Court, Lincoln's Inn Fields, etc. Further on, into Westminster, is the grand division of the metropolis known as the West End, the court, fashionable, and literary quarter—the London of polite society. Here are the Houses of Parliament, the various government offices. National Gallery, theaters, royal and other palaces, the many parks, club houses, picture galleries; the British Museum, Westminster Abbey, Kensington Gardens, etc. Farther north, the Regent's Park, Zoölogical Gardens, London University, Royal College of Surgeons, and literary institutions and public edifices greet the eye in numbers. Markets, hospitals, asylums, etc., are spread over this metropolis in great profusion; and it is estimated that not less than 4,000 churches, chapels, and places devoted to divine worship, flourish within its precincts. A magnificent roadway of granite, called the Thames Embankment, from 100 to 200 feet wide, extends on both sides of the river from Westminster to Blackfriars Bridge. The city proper is under the jurisdiction of a lord-mayor and courts of aldermen and common council, together forming the richest municipal corporation in the world, exercising jurisdiction within the liberties. London ranks higher as a literary even than as a commercial center. It is, essentially, the focus of British science and civilization—the world's metropolis. Nothing is known of London previous to the invasion of the Romans; but we learn from Tacitus that so early as the reign of Nero it was an important emporium. After the establishment of the Saxon dominion, London is supposed to have become the capital of the East Saxon kingdom. Eventually it became the capital of the entire kingdom, and, after the Norman conquest, received a charter, the original of which is still preserved as the palladium of the city's liberties. The history of London thenceforward is one of continual progression, though at different periods severely visited by fires, pestilence, etc. In 1381, Wat Tyler's rebellion was suppressed by the citizens, commanded by Sir William Walworth, then lord-mayor. In the 15th century, London began to make marvelous strides, and in the 16th, it vied with Venice, Genoa, and Amsterdam, both in extensive foreign commerce and in the opulence of its citizens. During the reign of Charles II., the city was partly desolated, first by the ravages of the Great Plague, and in 1666, by what is known in history as the "Great Fire of London." After this calamity, ancient London, being a thing of the past, the modern city arose upon its ruins.

During the World War London was subjected to many aerial bombardments by German Zeppelins and aeroplanes. Hundreds of people were killed and there was considerable loss of property, although this was small in comparison with the frequency of the raids and the power of the projectiles dropped.

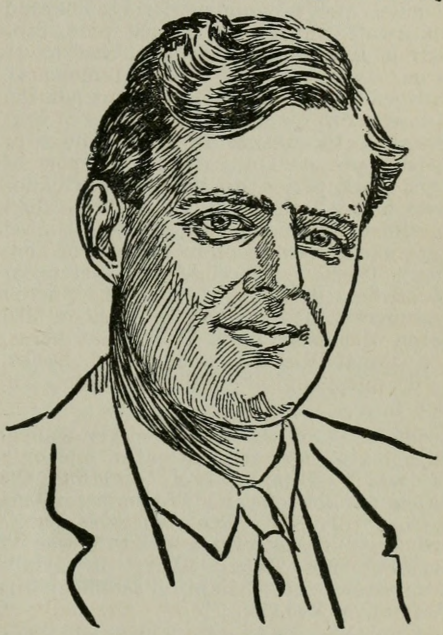
The city is provided with a system of underground railways which brings the surrounding country into quick communication with the center of the city.

LONDON, a port of entry and the principal city of Middlesex co., Ontario, Canada; on the Thames river, and the Grand Trunk, the Canadian Pacific, the Michigan Central, the Père Marquette, and the London and Port Stanley railroads; about 120 miles W. of Toronto. It is in one of the finest agricultural districts of the Dominion, and has numerous iron foundries, machine shops, mills, chemical works, boot and shoe factories, tanneries, breweries, printing offices, and other industrial establishments. It is the seat of Western University and College, and of Huron College; contains Anglican and Roman Catholic cathedrals, several hospitals, lunatic asylum, orphan asylum, convent, several banks, libraries, daily, weekly, and monthly periodicals. London is a noted summer and health resort, its white sulphur springs attracting many invalids. Pop. about 60,000.

LONDON-AUSTRALIA FLIGHT. In 1919 the Australian Government offered a $50,000 prize for an aeroplane flight from England to Australia, 30 days being allowed for the journey. The flight was successfully carried out by Captain Ross Smith and his brother, Lieutenant Keith M. Smith, who left Hounslow Aerodrome on Nov. 12, 1919, in a Vickers-Vimy bomber, and by way of Crete, Cairo, Bagdad, Delhi made the journey of 10,500 miles in 28 days, arriving at Port Darwin, Australia, on Dec. 10, 1919.

LONDON, DECLARATION OF, a code of rules governing naval war practices adopted by the International Naval Conference in London, promulgated Feb. 26, 1909. The principal naval and maritime powers attempted in this declaration to define rules and principles to govern naval practices in wartime which should be obligatory on national prize courts and upon the International Prize Court to be established; to define the rights and obligations of neutral traders and the relation of belligerents in warlike operations at sea. The powers united in stating that the rules agreed upon corresponded with the recognized principles of international law. The document marked an advance on rules previously in force, and displayed a more careful regard for neutral rights. The Declaration did not receive unanimous consent of the powers and failed to be put into effect. The House of Commons ratified it, but it was rejected by the Lords. In the World War, Great Britain at first announced adherence to the Declaration, and afterward reverted to the old principles, which were vigorously interpreted, causing friction with the United States and other neutrals.

LONDON, JACK, an American writer born in San Francisco, Cal., 1876; died on his ranch in Marin co., Cal., 1916. At the age of seventeen he made a trip to sea on a sealer, before the mast, cruising in Behring Sea. On his return a year later he tramped throughout the country, associating with the migratory laborers known as "hoboes." At the age of twenty-



JACK LONDON

one he took a special course in literature and sociology at the University of California, at Berkeley, but cut his studies short to join in the gold rush to the Alaskan gold fields. On his return, two years later, he began writing short stories on the North country, the first of which were published in the "Overland Monthly," in San Francisco. Later he contributed short stories to "McClure's Magazine," which attracted country-wide attention. It was "The Call of the Wild," however, published as a serial in "The Saturday Evening Post," then as a book, in 1903, that established his reputation as a writer of forceful fiction. His essays and books on sociological subjects, with a strong socialistic trend, also gained him a wide audience. His style much resembles that of Kipling, without the humor of Kipling. Among his most notable books are: "The Call of the Wild"

(1903); "The Sea Wolf" (1904); "Burning Daylight" (1910); "The Valley of the Moon" (1913); "People of the Abyss" (sociological, 1903); "The War of the Classes" (1905); "The Iron Heel" (1908), and "John Barleycorn" (1913), the latter being autobiographical.

LONDON, UNIVERSITY OF, an institution of learning in London, England; originally established as a joint-stock undertaking in 1825. In 1836 two charters were granted, one to a university retaining the name of University of London, and having power to examine and grant degrees, another to a teaching body occupying the original premises at Gower street, which took the name of University College, and now prepares students for obtaining the degrees conferred by the university. New and supplementary charters were granted in 1858, 1863, and 1878, the last admitting women to all degrees and prizes granted by the university. In 1910 King's College, except for the Department of Theology, became a part of the university. In 1918-1919 there were 3,300 students and 1,140 instructors. The university sends a representative to Parliament.

LONDONDERRY, a maritime county of the province of Ulster, Ireland. Area, 816 square miles. Good crops are produced in its fertile lowlands. The salmon fisheries of the river Bann are world-famous. The same river also supplies power for the staple manufacture of the province, linen. There are also extensive distilling, brewing, and salt making establishments, as well as important deep-sea fisheries. Capital, Londonderry. Pop. about 140,000.

LONDONDERRY, or **"DERRY,"** a county borough, seaport, and the capital of the county of Londonderry, Ireland; on the Foyle, about 140 miles north-northwest from Dublin; it contains, within the walls, four main streets, which cross at right angles, and form, with the smaller streets and lanes, a sort of parallelogram; the old walls still remain in fine repair, though the town has grown beyond them; principal buildings, the Anglican cathedral, a Gothic structure, built in the year 1633, a handsome modern Catholic cathedral, Foyle College (1617), a bishop's palace, a deanery, various places of worship, schools, a mechanics' institute, jail, an infirmary, a small theater, a linen-hall, town hall, district lunatic asylum, union workhouse, custom house, and barracks; also, a Doric column, surmounted by a statue, erected in honor of the Rev. G. Walker, who defended the city during its memorable siege (1689); has an extensive trade with the West Indies and the United States; the harbor is deep, wide, and tolerably secure. The town is of great antiquity, and has often suffered from the effects of war. Its chief industries are brewing and distilling, tanning, iron and brass founding, manufacture of linen and shirts, and salmon fishing. Steamers run to Liverpool, Glasgow, and Belfast. Pop. about 40,000.

LONG, JOHN DAVIS, an American statesman; born in Buckfield, Me., 1838. He graduated at Harvard in 1857; studied law at Harvard Law School and in private offices; was admitted to the bar in 1861; was a Republican member of the Massachusetts Legislature from 1875 to 1878; was speaker of the house 1876-1878; was lieutenant-governor of his State in 1879 and governor in 1880-1883; was elected to the 48th, 49th, and 50th Congress; was appointed by President McKinley Secretary of the Navy in 1897 and 1901. His administration of the department during the Spanish-American War was able. On the accession of President Roosevelt Mr. Long retained his office for six months, but on March 10, 1902, tendered his resignation. He resumed the practice of law and became president of the board of overseers of Harvard University. He published "The New American Navy" (2 vols., 1903). He died in 1915.

LONG, WALTER HUME, an English politician, born in 1854; was educated at Harrow and Christ Church, Oxford; from 1886 to 1892 was parliamentary secretary to the local government board; elected member of Parliament from West Derby, 1892-1900; president of the Board of Agriculture, 1895-1900; president of the local government board, 1900-1906; defeated for Parliament at Bristol in 1906; he was chosen from Dublin to represent the interests of Ulster, 1906-1910. Mr. Long was appointed chief secretary for Ireland, 1905-1906; president of the local government board, 1915-1916; secretary of state of the colonies, 1916-1918. From 1919 he held office as first lord of the admiralty.

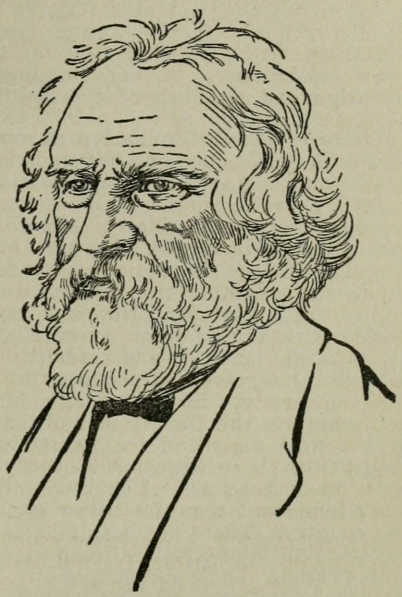
LONG BRANCH, a city in Monmouth co., N. J.; on the Atlantic Ocean and the Shrewsbury river, and on the Pennsylvania and the New Jersey Central railroads; 42 miles S. of New York City. Long Branch is one of the oldest and most noted summer resorts in the United States, and has a long beach, affording excellent bathing facilities. The advantages of its beach and of its proximity to New York and Philadelphia were recognized as early as 1790 and quickly gave it its prominent position among summer

resorts. The city has numerous hotels, pleasure resorts, cottages, parks, a board walk, and driveways, and electric railway communication with other New Jersey coast resorts. It has a National bank, public library, public schools, electric lights, and the Monmouth Memorial Hospital. The commission form of government has been adopted. Pop. (1910) 13,298; (1920) 13,521.

LONGCHAMPS (lôn*g*-sho*ng*'), the race-course on the S. W. side of the Bois du Boulogne, on the W. of Paris, France, where the race for the Grand Prix ("Grand Prize") is run.

LONGEVITY, great age, or duration of life. Among mammals only man and the elephant live to 100 years. Authentic cases have been recorded of men living to be 108 years old, but such instances are rare. Heredity plays an important part in the records of longevity, which runs in families. It is also due to a care for the laws of health, and regard for diet, cleanliness, and exercise. Within a few centuries the human life average has nearly doubled. In France between 1817 to 1831 the average was 29, and from 1840 to 1859 the average was 39. In England during these periods it was 39 and 49 respectively. In New York the average life is now 33 and a fraction.

LONGFELLOW, HENRY WADSWORTH, an American poet; born in Portland, Me., Feb. 27, 1807; was graduated in 1825 at Bowdoin College. In 1826 he accepted the professorship of modern languages at Bowdoin, spending, however, the next three years in Europe. In 1835 appeared "Outre-Mer," a volume of prose sketches, and in the same year he was elected to the Smith professorship of modern languages at Harvard. After spending another year in Europe, he entered on his professorship in 1836. In 1839 he published "Hyperion, a Romance," and "Voices of the Night." "Ballads and other Poems," and "Poems on Slavery" appeared in 1842; "The Spanish Student," a drama, in 1843; "The Belfry of Bruges" in 1846; "Evangeline" in 1847. In 1845 he published an anthology, "The Poets and Poetry of Europe." His other works were: "Kavanagh" (1849); "The Seaside and the Fireside" (1850); "The Golden Legend" (1851); "Hiawatha" (1855); the "Courtship of Miles Standish" and "Birds of Passage" (1858); "Tales of a Wayside Inn" (1863); "Flower de Luce" (1866); a translation of Dante's "Divine Comedy" (1867-1870); "New England Tragedies" (1869); "The Divine Tragedy" (1871); "Three Books of Song" (1872); "Aftermath" (1873); "The Hanging of the Crane" (1874); "Morituri Salutamus and the Masque of Pandora" (1875); "Keramos" (1878); "Ultima Thule" (1880); "In the Harbor" (1882); and "Michael Angelo," the fragment of a drama



HENRY WADSWORTH LONGFELLOW

(1883). He resigned his chair at Harvard in 1854. His poems are equally popular on both sides of the Atlantic. His best and most enduring work is to be found among his narrative and lyric poems. He died in Cambridge, Mass., March 24, 1882.

LONGFELLOW, SAMUEL, an American clergyman, brother of Henry W. Longfellow; born in Portland, Me., June 18, 1819. He was graduated at Harvard College in 1839, and at the Divinity School in 1846. He held pastorates in Unitarian churches in Fall River, Mass., Brooklyn, N. Y., and Germantown, Pa. Later he settled in Cambridge, Mass. As a hymn-writer he had few equals. He wrote: "Life of H. W. Longfellow" (2 vols., 1886); "Final Memorials of H. W. Longfellow" (1887). He died in Portland, Me., Oct. 3, 1892.

LONGFORD, a county in Ireland in the province of Leinster, with an area of 421 square miles and a population of 43,800. The southern part of the county is good pasture land, but in the northern section the soil is very poor. The capital of the county is Longford with a population of 3,700.

LONG ISLAND, an island forming part of the State of New York; extreme

length 118 miles; width varying from 15 to 23 miles; area, 1,682 square miles. It is connected with Manhattan by four bridges and three tunnels. The island is divided into Kings, Queens, Nassau, and Suffolk counties, and of its area that portion comprising Kings and Queens counties forms part of the city of New York under the names of Borough of Brooklyn and Borough of Queens.

LONG ISLAND CITY, a former municipality in Queens co., and the second city in size on Long Island, N. Y.; since Jan. 1, 1898, a part of the Borough of Queens in the Greater New York. Before the consolidation it comprised Hunter's Point, Ravenswood, Blissville, Dutch Kills, Steinway, and Astoria. It is separated from Brooklyn by Newtown creek, is connected with the Borough of Manhattan by several bridges and ferries, and contains extensive warehouses, oil refineries, lumber yards, machine shops, and many manufacturing establishments of the first magnitude. The increased transportation facilities in recent years have made Long Island City one of the most important manufacturing cities of the country. There are hospitals, banks, electric light and street railroad services, waterworks, and newspapers. Pop. (1890) as independent city, 30,396.

LONG ISLAND SOUND, a large body of water lying between Long Island and New York and Connecticut; length, about 110 miles; width varying from 2 to 20 miles. On the W. it is connected with the Atlantic by a strait called the East River, New York Bay, and the Narrows, and on the E. by a narrow passage called the Race. The principal rivers flowing into the Sound from the mainland are the Housatonic, Connecticut, and Thames. It is the route of a very large and important trade between the city of New York and the East, and is navigated by numerous regular lines of freight and passenger steamers.

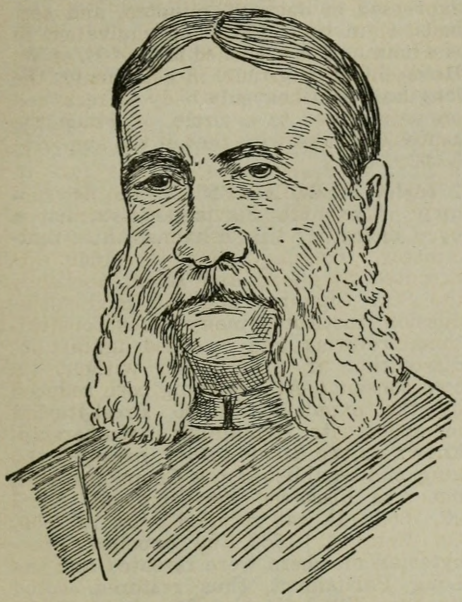
LONGITUDE, in astronomy, the distance in degrees reckoned along the ecliptic from the spring equinox to a circle at right angles to it passing through the heavenly body whose longitude is required. A star situated directly in the line between the pole of the ecliptic and the vernal equinox has no longitude. In place of celestial longitudes right ascensions are now generally noted. In geography, distance east or west on the surface of the globe. The longitude of a place is the arc of the equator intercepted between the meridian of the place and a meridian passing through some other place from which longitude is reckoned. Longitude, in the United States, is reckoned from the meridians of Washington, Greenwich, and Paris. Longitude is expressed in degrees, minutes, and seconds, or in time, 15° being equivalent to one hour. It is reckoned to 180° E. or W. Heliocentric longitude, in astronomy, the longitude of a heavenly body as reckoned on or referred to a circle, of which the center coincides with that of the sun. See LATITUDE.

LONG PARLIAMENT, in English history. The fifth Parliament summoned by Charles I. It convened at Westminster, Tuesday, Nov. 3, 1640. It executed Strafford and Laud, abolished the Star Chamber and the High Commission, instituted many other constitutional reforms, and provided against its dissolution or prorogation without its own consent. After having been reduced by the expulsion of 96 Presbyterian members, its remaining membership, known as the RUMP (*q. v.*), executed the king and established the Commonwealth, but was dissolved by Cromwell, April 20, 1653. It was recalled twice in 1659. On Feb. 21, 1660, the expelled Presbyterian members were reseated and the Long Parliament, thus restored, voted its own dissolution on March 16, 1660.

LONG'S PEAK, named after Col. S. H. Long, engineer and explorer, one of the highest peaks (14,271 feet) of the Rocky Mountains in Colorado.

LONGSTREET, JAMES, an American military officer; born in Edgefield district, S. C., Jan. 8, 1821. He was graduated at the United States Military Academy in 1842. He served with distinction in the Mexican War, and after obtaining his captaincy, was brevetted major. After serving for some time in Texas, Longstreet was appointed, in 1858, paymaster in the regular army. Resigning his commission at the outbreak of the Civil War, he joined the Confederates with the rank of Brigadier-General. He distinguished himself in the battle of Bull Run. In 1862 he was made Major-General, and earned great celebrity under General Lee, in the campaigns against Generals Pope, McClellan, and Burnside. After the battle of Fredericksburg, General Longstreet was given the command of a corps, with the rank of Lieutenant-General. With this force he took an active and distinguished part in the battles of Chancellorsville, Gettysburg, and Chickamauga. In the battle of the Wilderness, General Longstreet was dangerously wounded. After the fall of Richmond he surrendered, and lived in comparative retirement till 1869, when he was appointed Supervisor of

Customs at New Orleans. Later he was made Minister to Turkey, and United States Marshal for the District of



GEN. JAMES LONGSTREET

Georgia. In 1897 he was appointed United States Commissioner of Railroads. He published "From Manassas to Appomattox" (1904). He died near Gainesville, Ga., Jan. 2, 1904.

LONGUEVAL, a town in northern France, department of the Somme. The population before the World War was 363. The scene of heavy fighting at different periods in the great conflict. On July 14, 1916, when the battle of the Somme began, the British carried the village and trenches around it with a rush, but fighting was prolonged among the houses as the Germans refused to give or take quarter. The attack was carried out by the 26th Brigade, 8th Black Watch and the 10th Argyle and Sutherlands in the lead. During July Longueval was continually fought over and the Germans finally regained possession.

LONGUEVILLE (lông-vēl'), the name of a noble French family, the principal of whom are FRANCIS D'ORLEANS, son of the celebrated Dunois, died 1491. His son, of the same name, at whose instance, in 1505, the county of Longueville was erected into a dukedom by Louis XII., died 1512. His brother, LOUIS, a combatant at the battle of the Spurs and at Marignano, died 1516. CLAUDE, killed at the siege of Pavia, 1525. LEONARD, at whose instance the dukes of Longueville were allowed the title of princes of the blood royal by Charles IX., died 1571. HENRY, who commanded against the leaguers, and in 1589 won the battle of Senlis, died 1595. His son, of the same name, served under Louis XIII., and was afterward imprisoned with Condé and Conti, as partisans of the Fronde, died 1663. The wife of the latter, ANNE GENEVIEVE, sister of the great Condé, distinguished for her part in the wars of the Fronde, died in religious retirement. The last of the family were two sons of Henry and Anne, the eldest of whom died in a convent, 1694; and the second, C. PARIS, was killed at the Rhine, 1672.

LONGVIEW, county-seat of Gregg co., Tex., 24 miles W. of Marshall, on the Sabine river, Texas and Pacific, International and Great Northern, and Texas and Gulf railroads. Commercial center of lumber, cotton, live-stock district. Has foundries, plow works, and mineral wells. Pop. (1910) 5,155; (1920) 5,713.

LONGWORTH, NICHOLAS, member of the House of Representatives from Ohio since 1903, with the exception of two years, viz. 1913-1915. Born at Cincinnati Nov. 5, 1869, graduated from Harvard University in 1891, and admitted to the bar in Ohio three years later. He has always taken a prominent part in support of the Republican party in his State and nation. On Feb. 17, 1906, at the White House he married Alice Lee Roosevelt, daughter of President Roosevelt.

LONGWY (lông-wē'), a small town and fortress in the extreme N. of the French department of Meurthe-et-Moselle, 18 miles W. S. W. of Luxemburg. The fortress capitulated to the Prussians in 1792, 1815, and 1871. During the World War the fortress was the first in France to be captured by the Germans. Pop. (1914) 9,700.

LÖNNROT, ELIAS (luhn'rot), a great Finnish scholar and folklorist; born in Sammatti, Nyland, Finland, April 9, 1802. He studied medicine, and practiced for some years, but in 1853 was appointed to the chair of Finnish at the University of Helsingfors, from which he retired in 1862. Throughout his life he made journeys through Finland, Lapland, Russia, and Sweden, in order to collect the remains of poetry and tradition lingering among the people. He edited and published a collection of Finnish folk-songs, "The Lyre"

(1829-1831); the great Finnish national epic of the "Kalevala" (1835); "Lyric Art" (1840), a collection of lyrical folk-poetry; "Proverbs of the Finnish People" (1842); "Riddles of the Finnish People" (1844). His latest work was the great Finnish Dictionary (2 vols. 1866-1880). He died in Sammatti, March 19, 1884.

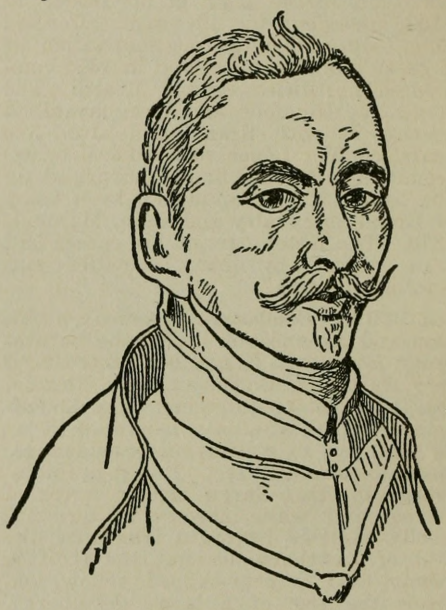
LONS - LE - SAUNIER (lôn*g*-luh-sō-ıyā), the capital of the department of Jura, France, on the Vallière, about 75 miles N. E. of Lyons; the ancient brine-springs, to which the town owes its foundation and name, are still utilized for the extraction of salt and for medicinal purposes. Birthplace of Dumas and of Rouget de l'Isle, author of the "Marseillaise." Pop. about 12,000.

LOOKOUT MOUNTAIN, a high point in the ridge of mountains running through northwestern Georgia and adjacent parts of Tennessee and Alabama. It overhangs the Tennessee river near Chattanooga and from the top, 1,600 feet above the river, seven States can be seen. It was here that, during the Civil War, the famous "battle above the clouds" took place Nov. 23-25, 1863, between the Confederate force under General Bragg, holding the mountain, and the Union forces under General Grant. The latter scaled the almost precipitous sides of the mountain, and surprised the enemy, dislodging them and compelling them to retreat after a desperate conflict. This victory gave the Union army unimpeded navigation of the river to Chattanooga, relieved this city and forced Longstreet to give up his siege of Burnside at Knoxville and to retreat to Virginia.

LOON, a town in the Philippine Islands situated on the island of Bohol on the western coast. It is three miles S. of Sandigan Island and the largest town in that section of the archipelago. Near by is a good anchoring spot. Pop. about 20,000.

LOOS, a town in northern France, noted for a Cistercian abbey founded in 1181, it is said, by St. Bernard. It is now used as a prison. Before the World War (1914-1918) the population was 10,640. The scene of many struggles between the Germans and the forces of the Allies. The battle of Loos, begun on Sept. 25, 1915, was the greatest battle the British had engaged in up to that time in the war. The fighting continued with brief intervals for three weeks and from first to last twelve British divisions were used in the Loos area alone. The assault in the main area was on a seven-mile front delivered by two corps of General Haig's First Army. The first corps was under General Gough, the fourth under General Rawlinson. The British gained in this battle 7,000 yards of front and 4,000 of depth. They captured 3,000 prisoners and lost 50,000 men and 2,000 officers.

LOPE DE VEGA (lō'pā dā vā'gä), **(LOPE FELIX DE VEGA CARPIO)**, a Spanish dramatist and poet; born in Madrid, Spain, Nov. 25, 1562. Lope, a man of adventurous disposition, led a very active life till he had attained mid-



LOPE DE VEGA

dle age. He served as a soldier, and narrowly escaped shipwreck in the Armada. On the death of his second wife, he took holy orders; but this step, though it removed him from business, did not slacken his literary activity. He was the most prolific of all authors, composing with a rapidity which, while it implied extraordinary talents, made it impossible that his works should possess high merit, either in design or in execution. Besides writing epics and many other kinds of poems, he produced a number of dramas, so great as to be almost incredible. He himself states it at upward of 1,500; and more than 500 plays attributed to him are actually in print. They embrace all the varieties of kind which are to be found among the works of his successor Calderon; and they abound both in snatches of wit and poetical fancy, and in ingenuity of dramatic invention.

Though Lope was not the founder of the Spanish drama, he was the first who made its romantic irregularities attractive through force and originality of genius. He died in Madrid, Aug. 27, 1635.

LÓPEZ, FRANCISCO SOLANO, President of Paraguay; born in Asuncion in 1827; son of Don Carlos Antonio Lopez, president of Paraguay from 1844-1862. He filled some of the principal offices of state while his father was president, and was sent to Europe in 1853, accredited to the chief courts there. In 1855 he returned to Paraguay, became minister of war, and on the death of his father, in 1862, president for 10 years. He had long been aiming at the foundation of a great inland empire, and in 1864 commenced hostilities against Brazil. The Argentine Republic and Uruguay allied themselves with Brazil, and after five years' conflict López was reduced to extremities, and was finally surprised on the banks of the Aquidaban by a troop of Brazilian cavalry and slain, March 1, 1870. The latter part of his career had been stained by many cruelties and wanton murders.

LOQUAT (*Eriobotrya Japonica*), a Chinese and Japanese fruit, of the natural order *Rosaceæ*. It has been introduced into Australia, California, and Florida, and is now abundant there. The Loquat tree or shrub attains a height of 20 or 30 feet, but in cultivation is seldom allowed to exceed 12 feet. It is a beautiful evergreen, with large oblong wrinkled leaves, and white flowers in terminal woolly panicles, having a fragrance like that of hawthorn-blossom; the fruit is downy, oval, or pear-shaped, yellow, and about the size of a large gooseberry. The seeds have an agreeable flavor.

LORAIN, a city of Ohio, in Lorain co. and on the Lake Erie, Northern Chicago, Baltimore and Ohio, Lorain and West Virginia and Lake Shore Electric railroads. It is the center of an important industrial community and has manufactures of steel, iron, and a large shipbuilding plant. It has a Carnegie Library, a hospital and other important public buildings. It is well supplied with natural gas and is an important outlet for the central Ohio coal fields. It also ships important quantities of lumber, iron, and grain. It has an excellent system of docks. The population has grown rapidly in recent years. (1910) 28,883; (1920) 37,295.

LORD, in feudal times, the lord (*seigneur*) was the grantor or proprietor of the land, who retained the dominion or ultimate property of the feud or fee; and the grantee, who had only the use or possession of the land, was styled the feudatory or vassal. A person who has the fee of a manor, and consequently the homage of his tenants, is called the "lord of the manor." The superior lord is styled "lord paramount"; and his tenants, if they grant a portion of the land to other tenants, while they remain tenants in reference to the lord paramount, are lords in reference to their own tenants, and are hence styled mesne or middle lords. Lord, in Great Britain, is also a title of dignity attached to certain official stations, sometimes hereditary, sometimes only official or personal. All who are noble by birth or creation are styled lords. It is likewise given by courtesy to the younger sons of dukes and marquises, and to the eldest sons of these and of earls.

In the translation of the Scriptures, Lord is used, without much discrimination, for all the names applied to God; but when it represents the great name of Jehovah, it is printed in small capitals. In the New Testament it is applied to Jesus Christ, the term in the original Greek being *kurios* (owner or master).

LORD CHAMBERLAIN, an officer of state in England who has control of the establishment attached to the chapels royal; of officers and servants attached to the royal chambers, except of those of the bedchamber; and over the medical men of the household. The royal tradesmen are appointed by him. He directs all great royal ceremonies, receives all applications to attend levées and drawing-rooms, superintends the royal wardrobe and the jewel house at the Tower, and licenses theaters and plays, his power extending to the cities of London and Westminster, and certain other parts of the metropolis, as well as to those places within which the sovereign may reside occasionally. The power of licensing theaters elsewhere belongs to the justices.

LORD CHANCELLOR (England), the highest judicial officer of the Crown, law adviser to the Government, and Keeper of the Great Seal. He ranks next to the royal family and the Archbishop of Canterbury. Privy Councillor and member of the Cabinet, and a presiding officer of the House of Lords. He appoints all justices of the peace in the Kingdom and in general all judges of the Superior Courts except chief judges. Is also Chief Judge of the Court of Chancery. The salary is £10,000 with an annuity of £5,000 on retirement from office.

LORD CHIEF-JUSTICE (England). The official title of the Chief-Justice of

the King's Bench Division of the Supreme Court of Judication in England. While the King's Bench, Common Pleas, and Exchequer, the three superior courts, hold about equal power, yet the King's (or Queen's) has always enjoyed a certain pre-eminence, the Chief-Justice of that court having precedence over the Chief-Justice of Common Pleas and the Chief Baron of the Exchequer. The Lord Chief-Justice is a lord of Parliament, and in court and abroad is entitled to be addressed as "Lord."

LORD-LIEUTENANT, a British official of high rank, representing the sovereign, as: (1) The Viceroy, or Lord-lieutenant of Ireland, who is a member of the ministry, retiring from office with them. He has the control of the government of the country, subject to the approval of the ministry in office, and nearly all the patronage is also vested in him. He can confer knighthood. In his government he is assisted by a privy council nominated by the sovereign. (2) The lord-lieutenant of a county, the principal official of a county, at whose recommendation all deputy-lieutenants and justices of the peace are appointed, and first commissions in the yeomanry, militia, and volunteers are given.

LORD MAYOR, the title given to the chief magistrates of London and York, England, and of Dublin, Ireland, during the year for which they hold office.

LORD'S PRAYER, the prayer which Jesus taught His disciples (Matt. vi: 9-13; Luke xi: 2-4).

LORD'S SUPPER, a term first used by St. Paul in I Cor. xi: 20, of a ceremonial ordinance observed in the Corinthian and doubtless in other churches. The night on which Jesus was betrayed, He took bread, blessed it, brake it, and gave it to His disciples to eat, with wine similarly blessed for them to drink, the former in the Protestant view symbolizing His broken Body, the latter His shed Blood. (Matt. xxvi: 26-29; Mark xiv: 22-25; Luke xxii: 14-20). St. Luke records that Jesus said, "Do this in remembrance of me" (xxii: 19). St. Paul evidently considered that these words, addressed originally to the apostles, were designed for the Church of all ages. The term Lord's supper is used chiefly by those who hold the ordinance to be a commemorative one. See COMMUNION: EUCHARIST: MASS.

LOREE, LEONOR FRESNEL, railway president, born in Fulton City, Ill., 1858. Graduating from Rutgers in 1877, he entered the service of the Pa. R. R. as assistant in the engineer corps. Two years later he became transitman in the Engineers Corps, U. S. A. After two years' service he resumed railroad work. In 1896 he became general manager of the Pa. R. R. and fourth vice-president in 1901. He was successively president of the B. & O. R. R. (1901-1904); R. I. Co. of N. J. (1904); D. & H. R. R. Co. (1907). From 1899 to 1901 he was president of the American Railway Association. Was a delegate to the International Railway Congress in Paris in 1900.

LORELEI (lō're-lī), or **LURLEI** (lōr'), a rock which rises perpendicularly from the Rhine, to the height of 427 feet, near St. Goar. It used to be dangerous to boatmen, and has a celebrated echo. But the name is best known from Heine's song.

LORENZ, ADOLF, an orthopædic surgeon of Vienna, Austria. In 1880 he became assistant to Professor Albert, who occupied the chair of surgery at the University of Vienna. Instead of taking up general surgery he specialized in orthopædic surgery. He became famous as the "bloodless surgeon" because of his reduction of the dislocation of the hip joint by manipulation rather than cutting. In 1902 he visited the United States and England, holding clinics in the more important hospitals.

LORETO (lō-rā'tō), an interior department of Peru, in the N. E. part of the Republic, watered for thousands of miles by the Marañon and its tributaries; area (est.) 288,500 square miles; pop. (est.) 100,000 (chiefly Indians). Vast portions of the department are still unexplored, being covered with thick forests. The climate is hot and unhealthy. Chief products: rubber, salt, quinine, tobacco, tropical fruits. Capital, Iquitos.

LORETTO (lō-ret'tō), or **LORETO**, a city of Italy, in the province of Ancona, about 15 miles S. E. of Ancona. It is a famous resort of pilgrims, who come to visit the Casa Santa or Holy House of Loretto, which is said to have been the house of the Holy Family at Nazareth, and to have been miraculously conveyed by the angels first to Fiume in Dalmatia, and afterward to Loretto. The Holy House is in the center of a beautiful church built by Majano and Bramante (1464-1587). The number of pilgrims amounts to 50,000 yearly. The town is the seat of a bishop since 1586. Pop. about 7,000.

L'ORIENT (lō-ryo*ng*'), a seaport in the French department of Morbihan; on a good bay; 116 miles N. W. of Nantes; is a well-built town, with a deep and

spacious harbor; founded in 1664 by the French East India Company; but, after the ruin of their trade by the English toward the close of the next century, their plant was acquired by the government, who since 1815 have made L'Orient the principal naval shipbuilding yard in France; the dockyard and arsenal are consequently among the best and largest in the country and the place ranks as a fortress of the second class; has schools of navigation and marine artillery, and an observatory; inhabitants engaged chiefly in shipbuilding and its cognate trades, in fishing (especially sardines), and raising of oysters; the trade does not exceed a total of 100,000 tons annually. Off this port the British fleet under Lord Bridport defeated the French under Villaret-Joyeuse, June 23, 1795. Pop. about 50,000.

LORIMER, GEORGE HORACE, American editor, born in Louisville, Ky., 1868, graduated from Yale, then devoted himself to general newspaper work, till 1899, when he became editor of the "Saturday Evening Post," for whose wide popularity his ability was largely responsible. He is also known as a humorous writer. Among the most popular of his books are "Letters from a Self-Made Merchant to his Son" (1902) and "Jack Spurlock—Prodigal" (1908).

LORING, WILLIAM WING, an American military officer; born in Wilmington, N. C., Dec. 4, 1818; participated in the Seminole War, the war for Texan independence, the Mexican War, Indian wars, etc. In May, 1861, he resigned his commission; became a Brigadier-General in the Confederate army and later Major-General. He went to Egypt in 1869 and reorganized the army of the Khedive. In 1879 he returned to the United States and published "A Confederate Soldier in Egypt" (1883). He died Dec. 30, 1886.

LORRAINE. See ALSACE-LORRAINE.

LORY, a group of birds composed of about 90 species, closely allied to the parrots; brush-tongued; dense, richly colored plumage; active and gentle. They are to be found in Polynesia and Australasia, except New Zealand.

LOS ANDES, a state in Venezuela, situated in the western part of that country, now divided into three states: Trujillo, Mérida, and Tachira. The population is about 350,000, and the area about 50,000 square miles.

LOS ANDES, UNIVERSITY OF, one of the two universities of the Republic of Venezuela, the other being the Central University at Caracas. It is at Mérida, and has professors, doctors, and honorary members.

LOS ANGELES, a city of California, the county-seat of Los Angeles co. It is 475 miles S. E. of San Francisco. It is situated on the Los Angeles river, and the Southern Pacific, Atchison, Topeka and Santa Fe, the San Pedro, Los Angeles and Salt Lake, and the Southern Pacific railways. The total area is about 300 square miles. Los Angeles is noted for the healthfulness of its climate and for the beauty of its surroundings. In the vicinity are many well-known pleasure resorts which are easily accessible from the city. It has a magnificent harbor and a system of docks which were constructed at a cost of over $10,000,000. There are many public and private institutions. These include the State Normal School, the University of Southern California, the Occidental College and St. Vincent's College. Among the notable public buildings are the Bible Institute, State Normal College, city hall, court house, hall of records, auditorium, Blanchard Art building, and a Roman Catholic cathedral. The city has a magnificent system of parks, and there are public libraries, hospitals, and a park area which covers nearly 5,000 acres. Although Los Angeles is notable as a resident city, it has important business interests. There are over 25 banks with annual clearings of over $2,000,000,000. It is in the center of an important fruit-growing region and prior to the prohibition amendment had extensive wine-making industries. The chief exports are oranges and lemons, live stock and oils. The city is also in the center of a mining region of southern California and Arizona. There are large petroleum refineries. Other industries include foundries, machine shops, meat-packing plants, publishing houses, etc. The total value of manufactured products is over $200,000,000 annually.

In recent years a notable development of the city has been in relation to the moving picture industry. The unusually clear atmosphere and the opportunities afforded by the varied scenery in the vicinity have combined to make it very attractive for the taking of moving pictures. Many of the largest moving picture companies in the United States maintain huge establishments and thousands of actors and others connected with the industry have made Los Angeles their home. This with other causes has resulted in a large increase of population in the decade from 1910. By the census of 1920 Los Angeles exceeded San Fran-

cisco in population and became the largest city in California. The population in 1910 was 319,198, and in 1920, 575,480. Los Angeles was settled in 1781 by the Spaniards. It was captured by Commodore Stockton in 1846. It was chartered as a city in 1851.

LOS RIOS, inland province of Ecuador, capital Babahoyo (Bodegas). Mountainous, being on slope of Andes, communicates with sea by Guayaquil river, chief industries farming and stock raising. Pop. about 35,000.

LOS SANTOS, town, Panama, 95 miles S. W. of the city of Panama, near the Bay of Parita, in province of the same name of which the capital is Las Tablas.

LOSSING, BENSON JOHN, an American historian; born in Beekman, Dutchess co., N. Y., Feb. 12, 1813. He published "Pictorial Field-Books" of the Revolution, the War of 1812, and the Civil War, the first in 1850-1852 (2 vols.), the second in 1868, the third 1866-1869 (3 vols.). He was a wood engraver, and himself made the engravings for the works, the scenic ones largely from sketches on the spots. He wrote also "Lives of the Presidents of the United States" (1847); "Biographies of Eminent Americans" (1855); "Cyclopædia of United States History" (1881, revised and enlarged to 10 vols., by George J. Hagar 1901); "History of New York City" (1884); "The Empire State" (1887); etc. He died near Dover Plains, N. Y., June 3, 1891.

LOT (lō) (Latin Oltis), one of the largest tributaries of the Garonne in southern France, rising in the Cévennes, flowing in a generally W. direction, being known at first as the Olt, through the departments of Lozère, Aveyron, Lot, and Lot-et-Garonne, and joining the Garonne from the right at Aiguillon, after a course of nearly 300 miles, nearly two-thirds being navigable.

LOT, a department in the S. of France, formed out of parts of the old province of Guienne, and comprising the arrondissements of Cahors, Gourdon, and Figeac, watered by the Dordogne and the Lot; area 2,017 square miles; pop., about 220,000. The E. districts are invaded by the *Causses* plateaus of the Cévennes; the valleys fertile; wheat, maize, tobacco, fruits, chestnuts, and especially wine are the more important products. Sheep-breeding is largely carried on. Milling, tanning, flax mills, and the manufacture of woolens are the only branches of industry. Capital, Cahors.

LOT, according to the Book of Genesis, the son of Haran, and nephew of Abraham, by whom he was brought up. He afterward settled at Sodom, where he was taken prisoner by the King of Edom, but rescued by Abraham. When Sodom was about to be destroyed, two angels came to Lot and obliged him to quit the place with his wife and daughters, when the former, for looking back, was turned into a pillar of salt. By his daughters he became the father of two sons, named Moab and Ammon, from whom sprung the Moabites and Ammonites.

LOT-ET-GARONNE (lō-tā-gä-ron'), a department in the S. W. of France, formed out of parts of the old provinces of Guienne and Gascony, and comprising the arrondissements of Agen, Villeneuve, Marmande, and Nérac, watered by the Garonne and its tributaries, the Gers and Lot; area 2,078 square miles; pop. about 275,000. The department is a rolling plain and extremely fertile, except in the S. W., where it is invaded by the *landes;* principal products wheat, maize, wine (20,000,000 gallons annually), hemp, fruits (the plums of Agen are particularly celebrated), tobacco, potatoes, flax, and oil-plants; pine, cork, and chestnut woods are numerous; poultry are reared in great numbers for exportation; manufacturing is confined chiefly to metal-works, paper-mills, woolen and cork factories, distilleries, and tanneries. Capital, Agen.

LOTHAIRE I., Roman Emperor, eldest son of LOUIS LE DÉBONNAIRE (*q. v.*); born about 795. In 817 he was associated with his father in the empire, and named King of the Lombards in 820. He afterward dethroned his father. After his father's death, Louis and Charles, his brothers, joined forces, and defeated Lothaire at Fontenoy, in 841. Two years afterward, the three brothers entered into a treaty at Verdun by which Lothaire retained the title of emperor, with Italy and some French provinces beyond the Rhine and the Rhone. Died in 855.

LOTHAIRE II., Emperor of Germany, and Duke of Saxony, between 1125 and 1137. He died in Italy, on his return from an expedition against Roger, King of Sicily.

LOTHIANS, THE. Name applied to three counties of Scotland, Edinburgh, Linlithgow, and Haddington. This name formerly included all the section of Scotland held by the English in the eleventh century, a territory larger than the three counties.

LOTHROP, HARRIET MULFORD, pseudonym MARGARET SIDNEY, an Amer-

ican novelist, wife of the publisher, D. Lothrop; born in New Haven, Conn., in 1844. She founded and is honorary president for life of the National Society of the Children of the American Revolution. She has written a long series of children's books, among which are: "So As by Fire" (1881); "The Pettibone Name" (1883); "The Golden West" (1885); "The Minute-Man" (1886); "Dilly and the Captain" (1887); "Little Maid of Concord Town" (1898); "Adventures of Joel Pepper" (1900); "A Little Maid of Boston Town" (1910); "Our Davie Pepper" (1916); etc.

LOTI, PIERRE (lō-tē'), a French poet and novelist; real name LOUIS MARIE JULIEN VIAUD; born in Rochefort, Jan. 15, 1850. He was a French naval officer until 1898 and in 1891 was elected a member of the French Academy. His works include: "Aziyadé" (1876); "Rarahu" (1880), afterward called "The Marriage of Loti," a romance of Tahiti; "My Brother Yves"; "An Iceland Fisherman" (1886); "Madame Chrysanthème" (1887); "In Morocco" (1890); "The Romance of a Child" (1890); "A Phantom From the East" (1893); "Sailor" (1893); and "Jean Berny, Sailor" (1893); "The Desert" (1895); "Galilée" (1895); "India Under the British" (1903); "The Third Youth of Madame Prune" (1905); "The Death of Philœ" (1908); "The Daughter of Heaven" (with Judith Gautier, 1913); "On Life's By-Ways" (1914). He rejoined the French navy during the World War.



PIERRE LOTI

LOTTERY, the allotment or disposition of prizes by chance or lot; the drawing of lots. Lotteries are carried out by means of a number of tickets drawn at the same time, some of which entitle their owners to prizes, while the rest are blanks. Lotteries are frequently resorted to for the purpose of raising money for public purposes. They are still used in this manner in many European countries. In the United States they have been suppressed by legislation for almost a century, though in some States they were still legal as late as 1890, notably in Louisiana. In the latter year they were suppressed there, too, and Congress in the same year prohibited the transmission of lottery tickets or advertisements through the mails, and in 1894 their importation.

LOTUS, a name given by the Greeks to a number of different plants whose fruit was used for food. One of the most notable of these is the *Zizyphus lotus* of the N. of Africa and the S. of Europe, a shrub belonging to the natural order *Rhamneæ*. The fruit of the *Diospyrus Lotus*, or date plum, is the European lote. The name lotus was also given to several beautiful species of water lily, especially to the blue water lily (*Nymphæa cærulea*) and the Egyptian water lily (*N. lotus*), which grow in stagnant and slowly running water in the S. of Asia and N. of Africa. The *Nymphæa lotus* grows in the Nile and adjacent rivulets, and has a large white flower. It frequently appears in the hieroglyphs, where it represents the Upper Country of southern Egypt, and entered largely into works of art—the capitals of columns, prows of boats, heads of staves, and other objects being fashioned in its shape. In the mythology of the Hindus and Chinese, the lotus which plays a distinguished part is the Nelumbo.

LOUBET, ÉMILE (lö-bā'), President of the French Republic; born in Marsanne, Drôme, France, Dec. 31, 1838. His father, a simple peasant, provided him with the best education within his means. Émile studied law, and began practice in Montelimar. The first office he held was that of mayor of the city; in 1876 he was elected to a seat in the Chamber of Deputies; was re-elected in 1877, and again in 1881, but in 1885 moved up to the Senate; was Minister of Public Works in the short-lived Tirard Cabinet, Dec. 12, 1887, to April 3, 1888; on the refusal of M. de Freycinet to

reassume the presidency of the Cabinet, was intrusted by President Sadi-Carnot with the task of organizing the ministry with the larger part of its former constituents, himself assuming the portfolio of the Interior and the presidency of the Cabinet. M. Loubet was elected president of the Senate in 1896, to which position he was re-elected in January, 1898. He succeeded Félix Faure as president, Feb. 18, 1899, and remained in office until 1906, when he was succeeded by Clément Fallières.

LOUGHBOROUGH, a market-town of Leicestershire, England, with a population in 1920 of about 23,000. From a bell foundry located there came the great bell of St. Paul's Cathedral, London. The chief industry is hosiery manufacture, but there are also iron mills and dye works. It is one of the few cities in England not represented in Parliament.

LOUIS, the name of various European rulers, as follows:

GERMANY.

LOUIS (lö-ē') I., surnamed le Débonnaire, Emperor of Germany and King of France; born in 778. He succeeded his father, Charlemagne, in 814. In 817 he associated his eldest son, Lothaire, with himself in the empire, and gave to his other two sons, Pepin and Louis, the kingdoms of Aquitaine and Bavaria. In 829 Louis created his younger son, Charles, whom he had by Judith of Bavaria, King of Germany; on which his other sons arose against him, deprived him of his crown, and shut him up in a monastery, where he died, June 20, 840.

LOUIS II., surnamed the Young, Emperor of Germany; born about 822. He was the only son of Lothaire I., and was created King of Italy in 844, ascending the imperial throne in 855. He died in 875.

LOUIS III., called the Blind, Emperor of Germany. He was the son of Boson, King of Provence, and Ermengarde, daughter of the Emperor Louis the Young. He succeeded his father at the age of 10. He died about 923.

LOUIS IV., Emperor of Germany; born in 893. He was the son of the Emperor Arnulphus, whom he succeeded in 899. He was the last prince in Germany of the Carlovingian race. Died in 911.

LOUIS V., commonly called Louis of Bavaria, Emperor of Germany; born in 1286. He was the son of Louis the Severe, Duke of Bavaria. He was elected emperor in 1314, and the election resulted in civil war during which Louis was accidentally killed in 1347.

FRANCE.

LOUIS I., King of France. See LOUIS I., EMPEROR OF GERMANY.

LOUIS II., called the Stammerer, King of France; born in 846. He was the son of Charles the Bald, was crowned King of Aquitaine in 867, and succeeded his father as King of France in 877. Died in Compiègne, in 879.

LOUIS III., King of France; born about 863. He was the son of the preceding and brother of Carloman, with whom he enjoyed the kingdom. Died without issue in 882.

LOUIS IV., surnamed d'Outremer, King of France; born in 921. He was the son of Charles the Simple and ascended the throne in 936. He invaded Normandy, but was defeated and taken prisoner in 944. He regained his liberty the following year. He died of a fall from his horse in 954.

LOUIS V., surnamed the Fainéant (do-nothing), King of France; born in 966. He succeeded his father Lothaire in 986. He died in 987.

LOUIS VI., called the Big, King of France; born about 1078. He was the son of Philip I., and succeeded to the throne in 1108. His reign was disturbed by wars with the Normans, and also by feuds among his vassals. He also quarreled with Henry I. of England, and thus were commenced the wars between the English and French which lasted during three centuries. He died in 1137.

LOUIS VII., King of France; born about 1120. He was the son and successor of the preceding. He had a dispute with Pope Innocent II., on the right of presenting to benefices, and was excommunicated by that pontiff. After a reconciliation Louis, by the persuasions of St. Bernard, engaged in a crusade, but was defeated by Saladin. Having divorced his queen, Eleanor, she married Henry of Normandy, afterward Henry II. of England, to whom she brought, as her dower, the provinces of Poitou and Guienne. This produced a new war between England and France, which lasted, with little intermission, for 21 years. He died in 1180.

LOUIS VIII., named the Lion, King of France; born in 1187. He was the son of Philip Augustus and his queen Isabella of Hainault. He attempted, unsuccessfully, to aid the English barons against King John, and withdrew to France in September, 1217. He succeeded his father in 1223, and in the following year recovered most of the English possessions in France, in spite of papal excommunications. In 1226 he undertook

a crusade against Raymond, Count of Toulouse, and the Albigenses, and died in Auvergne in November of the same year. He had married, in 1200, Blanche of Castile, by whom he had seven sons and one daughter.

LOUIS IX., or Saint Louis, King of France; born in Poissy, France, April 25, 1214. He succeeded his father, Louis VIII., in 1226. In 1243 Louis defeated the English in several engagements, and a truce for five years was concluded. Having made a vow, in the event of recovering from a dangerous disease, to march against the infidels in the Holy Land, he made preparations for doing so, and in 1248 embarked at Aigues-Mortes with an army of 50,000 men, accompanied by his queen, his brothers, and almost all the chivalry of France. The expedition failed and Louis was taken prisoner. He was ransomed and embarked with about 6,000 men, the sole remains of his fine army, for Acre and spent four years more in Palestine. On his return to France he applied himself to the government of his kingdom with exemplary diligence, and ruled with impartiality and moderation. He undertook a second crusade, and died of the plague while besieging Tunis in 1270. Louis was canonized by Boniface VIII. in 1297, and his life was written by his friend, the Sire de Joinville.

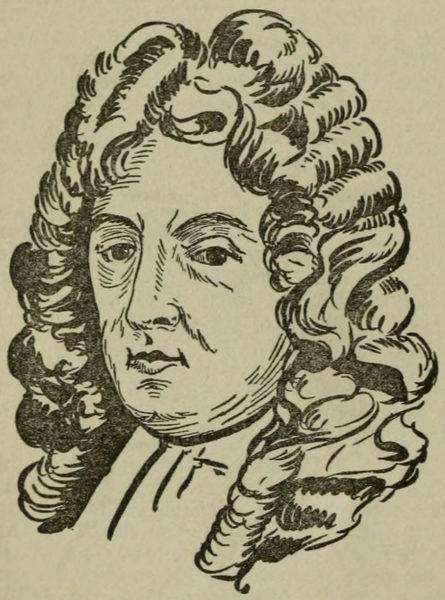
LOUIS X., surnamed Hutin (an old French term for quarrelsome), King of France; born in Paris in 1289. He succeeded Philip the Fair, his father, in 1314, being King of Navarre before, in right of his mother. Died in Vincennes, in 1316.

LOUIS XI., King of France; born in Bourges, France, July 3, 1425. He was the son of Charles VII. Active, bold, and cunning, he was in all respects unlike his father. He engaged in several conspiracies against his father and was obliged to live in exile for many years. On the death of his father, in 1461, he dismissed the former ministers, and filled their places with obscure men without character or talents to recommend them. Insurrections broke out in various parts of his dominions; but they were soon quelled, and followed by many executions. In everything he did, his crooked policy and sinister views were evident. He became involved in a war with Charles the Bold, Duke of Burgundy, which lasted 1465-1472. A peace was concluded on favorable terms for Charles and his allies; but when Louis returned to Paris he used every artifice to evade its fulfillment. The great object of Louis was the establishment of the royal power and the overthrow of the feudal aristocracy; but it is almost impossible to convey a just idea of his character, so contradictory were its qualities. He was at once confiding and suspicious, avaricious and lavish, audacious and timid, mild and cruel. He died in Plessis-les-Tours, near Tours, France, Aug. 30, 1483.

LOUIS XII., surnamed the Father of his People, King of France; born in Blois, France, June 27, 1462. He was the son of Charles, Duke of Orleans. On ascending the throne in 1498 he pardoned the wrongs he had suffered before his accession. He conquered the Milanese, Genoa, and Naples; but after ravaging Italy for 15 years the French were expelled in 1513. The Emperor Maximilian, Henry VIII. of England, and the Swiss, attacking Louis in his own dominions, he was obliged to sue for peace. About three months before his death he had married the young Princess Mary, sister of Henry VIII. Louis XII. possessed many of the qualities of a good ruler; he was honest, kind-hearted, and magnanimous; he was also a friend to science, and France enjoyed under him a high degree of prosperity and security. He died Jan. 1, 1515.

LOUIS XIII., King of France; born in Fontainebleau, France, Sept. 27, 1601. He was the son of Henry IV. Being only nine years old at the death of his father, the care of him and the kingdom were intrusted to his mother, Marie de Medici. After the king, in 1615, married a Spanish princess, the Huguenots rose in arms, with Rohan and Soubise at their head; and a great part of the kingdom rebelled against the king, who now delivered himself up to the guidance of Cardinal Richelieu. After victory had inclined, sometimes to one side and sometimes to the other, peace was concluded in 1623. But it was of no long duration. La Rochelle, the headquarters of the Huguenots, revolted, and was supported by England. The king drove the English to the sea, conquered the island of Rhé, and at last took La Rochelle, which had sustained all the horrors of a siege for 12 months. In 1632 Gaston of Orleans, only brother of the king, revolted, out of dislike to Richelieu, and was assisted by the Duke of Montmorency, who being wounded and taken prisoner at the battle of Castelnaudary in 1632 was beheaded at Toulouse. Louis and the cardinal were attacked by a mortal disease nearly at the same time; the latter died in December, 1642, and the king in May following.

LOUIS XIV., called the Grand Monarque, King of France; born in St. Germain-en-Laye, France, Sept. 5, 1638. He was the son of the preceding, and only five years old on the death of his father, the regency being in the hands of the queen-mother, Anne of Austria, under whom Mazarin acted as prime minister. The nation was then involved in a war with Spain and the emperor, but though Louis was successful abroad, his kingdom was distracted by internal divisions;



LOUIS XIV.

the Parisians, irritated against Mazarin and the queen, took up arms; and the king, his mother, and the cardinal were obliged to fly. The Spaniards, profiting by these troubles, made several conquests in Champagne, Lorraine, and Italy. In 1651 the king assumed the government, but Mazarin returning to power the year following, the civil war was renewed. On the war breaking out between England and Holland, Louis joined with the latter; after a few naval actions the peace of Breda was concluded in 1667. In 1672 the French king made an attack on Holland and reduced some of its provinces in a few weeks. This invasion produced a new confederacy against Louis, between the emperor, Spain, and the Elector of Brandenburg, in which the allies were unsuccessful, and which was terminated in 1678 by the treaty of Nimeguen. Louis committed an act of impolitic cruelty, by the revocation, in 1685, of the Edict of Nantes, granted by Henry IV. in favor of the Protestants—a measure which drove from France a vast number of ingenious mechanics and others, who settled in England and Holland. About this time another league was formed against France by the Prince of Orange, the Duke of Savoy and the Electors of Bavaria and Brandenburg. To this league were afterward added the German emperor and the King of Spain. The dauphin had the command of the French army and the campaign resulted in military successes. These were counter-balanced by the defeat of Tourville's squadron off La Hogue, by Admiral Russell, June 2, 1692. Louis in person took Namur, and Luxembourg gained the battles of Steenkirk and Neerwinden. In 1696 Savoy made a separate peace with France, which was followed by a general one at Ryswick, in 1697.

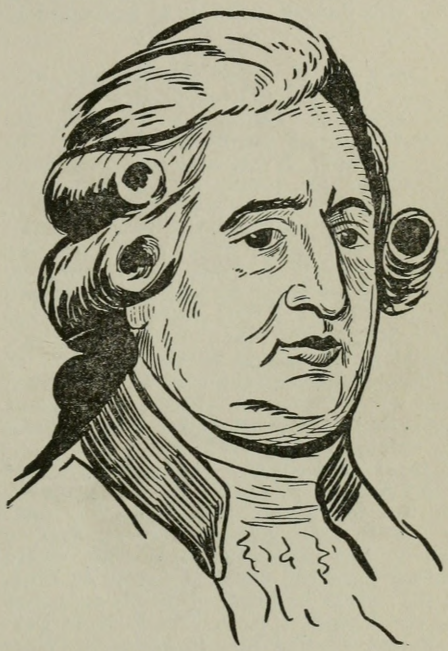
The death of Charles II. of Spain in 1700 resulted in wars which lasted for thirteen years. In 1713 a treaty of peace was signed at Utrecht by France, Spain, England, Savoy, Portugal, Prussia, and Holland; and the next year peace was concluded with the emperor at Rastadt. The internal administration of his government during this long period had been marked by the highest magnificence, and conduced to the most splendid results.

The domestic history of Louis, for the greater part of his life, is far more open to censure than any part of his public conduct. Apart from this, Louis XIV. was distinguished by high qualities of heart and mind, and his self-command and moderation in all that pertains to the sovereign character cannot be doubted. He died in Versailles, France, Sept. 1, 1715.

LOUIS XV., King of France; born in Versailles, France, Feb. 15, 1710. He was great-grandson and successor of the preceding; and Louis XIV. dying when he was only five years of age, the kingdom was placed under the regency of Philip, Duke of Orleans. Louis was crowned in 1722, and declared of age the following year. In 1725 the king married the daughter of the King of Poland. On the death of the last-mentioned monarch, in 1733, Louis supported the election of his father-in-law, Stanislaus, against the Elector of Saxony, which occasioned a war between France and the emperor. The French were successful in Italy, and a peace was concluded in 1738. The death of the Emperor Charles opened a new scene. In the struggle for the succession Louis supported the pretensions of the Elector of Bavaria, who called himself Charles VII. In 1744 Louis took the field in person,

and captured Courtray, Menin, and Ypres. On the other hand, the troops of the Duke of Saxony and of the Queen of Hungary ravaged Provence, and the English completely ruined the French commerce at sea, and negotiations were opened which ended in the peace of Aix-la-Chapelle in 1748. In 1755 a new war broke out between France and England, in which the latter power had Prussia for an ally, while Austria leagued with France. At first the French were successful, taking Port Mahon, defeating the Duke of Cumberland at Hastenbeck, and forcing the English general and his army to capitulate at Closter-Seven. The electorate of Hanover was conquered; but in 1757 the French and Austrians were defeated by Frederick the Great at Rossbach; this was followed by other losses, both by land and sea, particularly by the conquest of Canada by the English, and Louis, humiliated, despised by his subjects, and given up to the grossest immoralities with his mistresses, died in Versailles, France, May 10, 1774.

Louis XVI., King of France; born in Versailles, France, Aug. 23, 1754. He was son of Louis the dauphin and Maria Josephine, daughter of Frederic Augustus, King of Poland, and immediately created Duke of Berri. On the death of his father, in 1765, he became the heir to the throne; and in 1770 he married Marie Antoinette, an Austrian princess of great beauty and accomplishments. In 1774 he succeeded to the crown. France, at this time, was in a desperate financial and economic condition. Louis chose Turgot and Malesherbes for his first ministers. In 1774 the Parliament was recalled, and affairs began to assume a favorable aspect. On Feb. 6, 1778, he concluded the treaty of alliance with the United States, which in a few months resulted in the declaration of hostilities between France and Great Britain. The war cost France 1,400,000,000 livres; and besides the irreparable deficit it produced in the already disordered finances, it tended greatly to weaken the monarchy by diffusing republican and revolutionary ideas. Necker became, by his attempts at reform, so obnoxious to the court and the aristocracy that he was obliged to resign in 1781. Louis, at the suggestion of Necker, again in office, convened the states-general in May, 1789. The public mind was agitated. Mirabeau was the leader of the popular party. At his voice the people of Paris arose, and on July 14 of that year stormed the Bastille. Revolution had begun; and in October the armed mob, with a prodigious number of women, marched to Versailles, forced the palace, murdered the guards, and searched in vain for the queen, who would have shared the same fate had she not escaped. The result of this insurrection was the leading of the king and his family in triumph to Paris, amid the insults of a lawless rabble. In February, 1790, Louis was forced to accept the new constitution; but, notwithstanding all his concessions, finding himself a mere prisoner at Paris, and exposed daily to new injuries, he resolved



LOUIS XVI.

to escape. Accordingly, on the night of June 21, 1791, he and his family quitted the Tuileries; but at Varennes he was recognized and conducted back to Paris, where he became a prisoner in his own palace. The Legislative Assembly gave way to the National Convention, which brought Louis to trial. His defense was conducted by Malesherbes, Tronchet, and De Sèze, and his own deportment was, as it had uniformly been during his confinement, firm and modest, dignified and resigned. On Jan. 17, 1793, he was adjudged to death for conspiring against the public good. On Jan. 21 he was led to the scaffold, where he showed the calm fortitude which had distinguished him through all the scenes of suffering and indignity to which he had been exposed. His body was thrown into a pit filled with lime, and no vestige left of the place of his interment.

LOUIS XVII., titular King of France; born in Versailles, France, March 27, 1785. He was second son of the preceding, was at first styled Duc de Normandie, and after the death of his elder brother, Louis-Joseph, in 1789, became dauphin of France. Imprisoned in the Temple with his relatives, he was, after his father's death, styled monarch by the Royalists and foreign powers. A cobbler, named Simon, was appointed his jailer, with the derisive title of tutor. He died June 8, 1795, it is suspected of poison.

LOUIS XVIII. (Stanislas Xavier), surnamed Le Désiré, King of France; born in Versailles, France, Nov. 17, 1755. He was the second son of the dauphin (the son of Louis XV.), and was originally known as the Count de Provence. At the accession of his brother, Louis XVI., in 1774, he received the title of Monsieur; and after the death of his nephew, in 1795, from which time he reckoned his reign, he took the name and title of Louis XVIII., King of France and Navarre. When Louis XVI., attempting to escape to the frontiers of the kingdom, took the road to Montmedy, and was arrested at Varennes, Monsieur took that of Mons and reached Brussels in safety; and in 1792 he and the Count d'Artois joined the Prussian army at the head of 6,000 cavalry. The progress of the republican arms, however, compelled them to make a retreat, first to Turin, and afterward to Verona, where he assumed the name of Count de Lille, a title which he retained till his accession to the French throne. The Russian government allowed him to reside at Warsaw. After the peace of Tilsit he took refuge in England, where he was hospitably received, and where he remained till the fall of Napoleon, in 1814, drew him from his retreat to reascend the throne of his ancestors.

On May 3 he made his entry into Paris; on May 30 he caused a constitution to be drawn up; on June 4 it was formally accepted. When Napoleon made his reappearance in France, March 1, 1815, his presence roused every latent feeling, and inspired his former followers with tenfold courage and enthusiasm. Louis was compelled to flee from Paris on the 20th, and seek refuge in Belgium. The ministers, together with several officers of distinction, followed the king; and Talleyrand, in particular, was actively engaged in his cause at Vienna. Great events now followed in rapid succession. The battle of Waterloo, fought June 18, broke the power of Napoleon; Wellington and Blücher marched to Paris; and Fouché, who had already induced the emperor to leave France, put a stop to the shedding of blood by the capitulation of Paris, July 3. Thus was Louis once more restored to the throne of France. Among the most decided measures by which the king sought to support his throne was the ordinance of July 16 disbanding the army, according to the wishes of the Allies; and another, dated July 24, excluding from the general amnesty those who were there denominated "rebels," and whose punishment, for the most part, consisted in exile, or degradation from the peerage. All the relations of Napoleon were, under pain of death, banished from France; as were also those who had voted for the death of Louis XVI., and those who had, in 1815, received offices or honors from the "usurper." During the last few years of his reign Louis was much enfeebled by disease; and a paralysis of the lower limbs taking place, he died, Sept. 16, 1824.

LOUISBURG (lö'ē-burg), a port on the S. E. coast of Cape Breton Island, Nova Scotia, 27 miles S. E. of Sydney. It is inhabited only by a few fishermen; but there are the ruins of the old town, which under the French had a large export trade in cod, and was the strongest fortress in North America till taken by the English in 1758. It had already been captured by the New England colonists and an English squadron in 1745, and restored in 1748; now its fortifications, which had been 30 years in building, and cost over $5,000,000, were demolished, and it gradually sank into ruin.

LOUIS-D'OR (lö-ē-dor'), a gold coin introduced into France in 1641, and continued to be coined till 1795. The louis-d'or ranged in value from about $4.14 to $4.69. In some parts of Germany, in the old coinage, were gold pieces of five thalers, often popularly called louis-d'or, and the name has been occasionally applied to the French napoleon or 20-franc piece.

LOUISE, Queen of Prussia; born in Hanover, March 10, 1776. Her father, Duke Karl of Mecklenburg-Strelitz, was then commandant. She was married to the crown prince of Prussia, afterward Frederick William III., Dec. 24, 1793, and was the mother of Frederick William IV. and William III., afterward emperor. After her husband's accession to the throne she became exceedingly popular. This popularity was increased by her conduct during the period of national calamity that followed the battle of


LOUISIANA
SCALE OF STATUTE MILES
0 5 10 20 30 40 50 60 70 80
SCALE OF KILOMETERS
0 10 20 40 60 80 100 120
Places of 20,000 and over.....New Orleans
" " 5000 to 20,000.....Shreveport
" " 1000 to 5000.....Donaldsonville
County Towns ⊙ Railroads
GULF OF MEXICO
Longitude E-West 92° from Greenwich
Copyright, L. L. Poates Eng. Co., 1892

Jena, when she displayed not only a patriotic spirit, but no little energy and resolution. She died in Strelitz, July 19, 1810.

LOUISIADE (lö-ē-zē-äd′) **ARCHIPELAGO**, a group of islands belonging to British New Guinea, and forming an E. extension of that island; it embraces Sudest (45 miles long by 4 to 10 miles wide), Rossel, St. Aignan's (28 miles long by 8 to 9 miles wide), and a vast number of smaller islands. All are mountainous, rising to 3,500 in St. Aignan's and covered with vegetation. The natives seem to partake of both Malayan and Papuan characteristics.

LOUISIANA, a State in the South Central Division of the North American Union; bounded by Arkansas, Mississippi, the Gulf of Mexico, and Texas; admitted to the Union, April 30, 1812; number of parishes, 60; capital, Baton Rouge; total area, 48,720 square miles; pop. (1890) 1,118,587; (1900) 1,386,625; (1910) 1,656,388; (1920) 1,798,509.

Topography. — The surface of the State may properly be divided into two parts, the uplands, and the alluvial and coast and swamp regions. The alluvial regions, including the low swamps and coast lands, cover an area of about 20,000 square miles; they lie principally along the Mississippi, which traverses the State from north to south for a distance of about 600 miles, the Red river, the Ouachita and its branches, and other minor streams. The breadth of the alluvial region along the Mississippi is from 10 to 60 miles, and along the other streams it averages about 10 miles. The Mississippi flows upon a ridge formed by its own deposits, from which the lands incline toward the low swamps beyond at an average fall of six feet per mile. The lands along other streams present very similar features. These alluvial lands are never inundated save when breaks occur in the levees by which they are protected against the floods of the Mississippi and its tributaries. These floods, however, do not occur annually, and they may be said to be exceptional. With the maintenances of strong levees these alluvial lands would enjoy perpetual immunity from inundation. The uplands and contiguous hill lands have an area of more than 25,000 square miles, and they consist of prairie and woodlands. The elevations above sea-level range from 10 feet at the coast and swamp lands to 50 and 60 feet at the prairie and alluvial lands. In the uplands and hills the elevations rise from 60 feet to something under 500 feet in north Louisiana, where the greatest altitudes are to be found. Besides the navigable rivers already named (some of which are called bayous), there are the Sabine, forming the W. boundary, and the Pearl, the E. boundary, the Calcasieu, the Mermentau, the Vermilion, the Teche, the Atchafalaya, the Boeuf, the Lafourche, the Courtableau, the D'Arbonne, the Macon, the Tensas, the Amite, the Tchefuncta, the Tickfaw, the Matalbany, and a number of other streams of lesser note, constituting a natural system of navigable waterways, aggregating over 4,000 miles in length, which is unequalled in the United States and probably in the world. The State also has 1,060 square miles of land-locked bays, 1,700 square miles of inland lakes, and a river surface of over 500 square miles.

Soil.—The soil of Louisiana, generally, is exceedingly fertile and it varies from 10 to 40 feet in depth. The alluvial lands are world-renowned for their productiveness, and the larger part of the uplands surpass in fertility the same character of lands in most of the States. The pine flats, which elsewhere are considered sterile, are rendered productive when fertilized, and they would be more so with irrigation. The only non-productive portions of Louisiana are the salt sea-coast marshes. The principal forest trees include long and short leaf pine, oak, honey locust, ash, elm, sweet gum, magnolia, cypress, willow, cottonwood, palmetto, osage, poplar, orange, maple, walnut, wild cherry, persimmon, linden, tulip, holly, lime and hackberry.

Agriculture.—The State possesses exceptionally great agricultural advantages, embracing varieties of products appertaining to the temperature and to the semi-tropical zones. Cotton is grown throughout the State, and gives the largest general average yield per acre in the South. S. of the Red River, because they are usually more remunerative than cotton, sugar cane and rice are by preference cultivated in a great portion of the alluvial lands, and in recent years the prairie region of S. W. Louisiana has been converted into the most extensive region of rice culture in the United States. In 1919 the valuation of the productions of the State was as follows:

Cotton and by-products, $52,500,000; rice and by-products, $53,420,000; corn, oats, and hay, $60,362,000; and fruits, vegetables, live stock, etc., $5,000,000. Sugar is one of the most important. The production in 1919 was about 1,000,000 tons.

The animals on farms and ranches in 1916 were: Horses 193,000, valued at $15,626,000 mules, 132,000, valued at $15,972,000; sheep, 185,000, valued at $426,000; milch cows, 271,000, valued at $10,027,000; and other cattle, 475,000, valued at $7,980,000.

Manufactures.—There were reported by the United States census in 1914 2,211 manufacturing establishments employing $261,635,000 in capital, 77,665 persons, paying $39,544,000 in wages and $157,886,000 for materials; and having finished products valued at $255,313,000. The principal manufactures were sugar and molasses, lumber and timber products, cottonseed oil and cake, foundry and machine shop products, and clothing.

Geology.—The underlying strata of the State are of Cretaceous formation, and are covered by alluvial deposits of Tertiary and post-Tertiary origin. A large part of Louisiana is the creation and product of the Mississippi River. It was originally covered by an arm of the sea, and has been built up by the silt carried down the valley by the great river.

Mineralogy.—The mineral resources of the State are imprfectly known and only partially developed. Brown coal is found in the northwest, iron in north Louisiana, and sulphur in south Louisiana. Salt is found on the five islands of the Gulf coast, and is of the purest quality. Other discoveries of salt have recently been made on the mainland. Salt is extensively mined on Avery's Island and at Belle Isle, and its output is extensive, and Louisiana also has become one of the leading oil-producing States. The production in 1919 was over 40,000,000 barrels. Limestone, gypsum, and marble occur in several localities. Louisiana is the principal State in the production of sulphur.

Banking.—In 1919 there were 32 National banks in operation, with $7,550,000 in capital, $4,372,000 in outstanding circulation, and $17,164,000 in United States bonds. There were also 222 State banks, with $17,042,000 capital, and $9,052,000 surplus. In the year ending Sept. 30, 1919, the exchanges at the United States clearing house at New Orleans aggregated $2,890,884,000; an increase over the previous year of $315,229,000.

Education.—In 1916 the school population was 538,119; the enrollment in public schools, 320,300, and the average daily attendance, 235,933. There were 4,157 teachers; public school property valued at $1,125,000; receipts for the year $1,126,112; and expenditures, $1,126,112.

Churches.—The strongest denominations in the State are the Roman Catholic; Regular Baptist, colored; Regular Baptist, South; Methodist Episcopal, South; African Methodist; Protestant Episcopal; and Presbyterian, South.

Railroads.—The total length of railroads in the State on January, 1918, was 5,358 miles. The Texas and Pacific has the longest mileage.

State Government.—The governor is elected for a term of four years. Legislative sessions are held biennially and are limited in length to 60 days each. There are 8 representatives in Congress under the new apportionment. The State government in 1920 was Democratic, as in previous years.

History—Louisiana was colonized by the French in 1699, and was ceded in 1717 to a chartered company (one of the schemes of the notorious Law). In 1732 it was resumed by the crown; in 1763 ceded by France to Spain; in 1800 receded to France; and in 1803 purchased from France by the United States for $15,000,000. The territory comprehended in this purchase included the present State and all the country now occupied by Arkansas, Missouri, Iowa, Kansas, Nebraska, Indian Territory, North and South Dakota, and the greater part of Minnesota. By the act of Congress of March 26, 1804, the territory was divided into two governments, that of Orleans including the present State of Louisiana, and that of Louisiana, including all the country N. and W. of it. On Feb. 11, 1811, an Act of Congress enabled the inhabitants to form a constitution and State government; and by a subsequent act, the territory of Orleans was admitted to the Union, under the title of the State of Louisiana, on April 30, 1812. The State seceded from the Union Jan. 25, 1861, and became the theater of important military operations during the ensuing Civil War. On July 13, 1868, Louisiana was readmitted to representation in the Federal Congress, and in 1877, the governments growing out of reconstruction ceased and stable government was resumed. With this resumption has come the era of progress, which is shown in the foregoing.

LOUISIANA PURCHASE, the territory purchased from France in 1803.

LOUISIANA PURCHASE EXPOSITION, an exposition to commemorate the one hundredth anniversary of the purchase of Louisiana from France. It was held in St. Louis, Mo., from April to December, 1904. There were over five hundred buildings on the grounds con-

taining the exhibits of foreign governments, in addition to the large structures containing the manufactures of the United States. The buildings and grounds covered nearly 1,200 acres. Under the direction of the United States Government were important exhibits of the Philippine Islands. Most of the important tribes sent representatives, together with exhibits showing the state of industry among them.

LOUISIANA STATE UNIVERSITY AND AGRICULTURAL AND MECHANICAL COLLEGE, an educational nonsectarian institution, in Baton Rouge, La.; founded in 1860; reported at the close of 1918: Professors and instructors, 21; students, 326; volumes in the library, 21,000; productive funds, $318,313; grounds and buildings valued at $150,000; income, $47,333; President Thomas D. Boyd, M. A.

LOUIS PHILIPPE (lō'ē fi-lēp'), King of the French; born in Paris, France, Oct. 6, 1773. He was the eldest son of Duke Louis Philippe Joseph of Orleans, surnamed Egalité, and during his father's lifetime he was known as Duke of Chartres. He entered the army in 1791, and favoring the popular cause in the Revolution he took part in the battles of Valmy and Jemappes; was present at the bombardment of Venloo and Maestricht, and distinguished himself at Neerwinden. For 21 years he remained exiled from France, living in various European countries and in America. He had become Duke of Orleans on the death of his father in 1793, and in 1809 he married the daughter of Ferdinand IV. of Naples. After the fall of Napoleon I. he returned to France and was reinstated in his rank and property. At the revolution of July, 1830, he was made "Lieutenant-General of the Kingdom," and in August became king of the French. He reigned for 18 years, when the revolution of 1848 drove him from the throne to England, where he remained till his death in Claremont, Aug. 26, 1850.

LOUIS QUATORZE (kä-tōrz'), the name given to a meretricious style of architecture and internal decoration which prevailed in France in the reign of Louis XIV. It was marked by a deterioration of taste, the natural laws of architecture being more and more neglected, and replaced by certain conventional rules for the application of the Roman columnar orders. The windows are larger, the rooms more lofty, than in the preceding period, and in everything there was a striving after pomp and sumptuousness. Gilt stucco work was largely used, the scroll and shell patterns being the characteristic features of ornamental decoration, the panels being formed by chains of scrolls, concave and convex alternately, but symmetry of arrangement was largely neglected.

LOUIS QUINZE (kangz), the name sometimes given to the style of architecture and internal ornamentation prevailing in France during the reign of Louis XV. It is often known under the designation Rococo (*q. v.*). Internal arrangement and decoration are the main characteristics of the style of this period, and in this direction the best results were doubtless obtained. Large and lofty rooms, as well as scope of display, were indispensable; consequently this style of embellishment was most happily carried out in state apartments, especially in princely castles and palaces and the mansions of the aristocracy. Curved lines superseded all straight lines both in ground plans and in designs, while the most ordinary and characteristic embellishments were volutes, shell-fish and scrolls, groups of fruit, garlands of flowers, hangings, etc.

LOUISVILLE, a city and county-seat of Jefferson co., Ky.; on the Ohio river, and on the Louisville and Nashville; the Louisville, Henderson and St. Louis; the Cleveland, Cincinnati, Chicago and St. Louis; the Chicago, Indianapolis and Louisville; the Pittsburgh, Cincinnati, Chicago and St. Louis; the Illinois Central; the Chesapeake and Ohio, and the Southern railroads. The city is built at the falls of the Ohio 400 miles from its mouth, and is also known as Falls City, a name derived from these rapids which are 27 feet high. Area, 14,348 acres; pop. (1910) 223,928; (1920) 234,891.

The city is provided with modern water and lighting systems, and there is an abundance of electrical power for industrial purposes.

The public buildings of Louisville are of a solid and substantial character. They include the Court House, which is a limestone structure costing $1,000,000; the City Hall; Free Public Library; the United States Government Building; Masonic Temple; Commerce Building; Masonic Widows' and Orphans' Home; many public and semi-public institutions, and a magnificent city hospital. Louisville has nearly 250 large industrial plants. These include woodworking plants, metalworking plants, tobacco factories, textile mills, varnish manufactories, paint manufactories, large oil refineries, elevator plants, leather industries, refrigerating machinery plants,

clothing factories. The total value of manufactured products in Louisville amounts to $313,000,000 per annum. It is the center of the tobacco industry of the United States.

There were in 1920 four National and ten State banks, with deposits of over $100,000,000. The city has a branch of the Federal Reserve district bank. The bank clearings in 1919 were $1,635,533,961.

In 1920 over 35,000 children were enrolled in the public schools. There were 3 high schools, and 70 school buildings. The institutions of higher education include the University of Louisville (academic, law and medical departments); the Jefferson School of Law; the Southern Baptist Theological Seminary; the Presbyterian Theological Seminary of Kentucky, and several important institutions for the education of colored people. There are several excellent daily papers, including the famous "Courier-Journal."

History.—The first settlement was made here in 1778 by 13 families under Col. George Roger Clarke. Two years later the place was incorporated by an act of the Virginia Legislature, and called Louisville in honor of Louis XVI. of France, whose soldiers were then aiding the Americans in the Revolutionary War. During its early history it suffered greatly from Indian attacks. It was chartered as a city Feb. 13, 1828. In 1890 it was visited by a cyclone which destroyed $3,000,000 worth of property and killed 100 persons.

LOUNSBURY, THOMAS RAYNESFORD, an American scholar; born in Ovid, N. Y., Jan. 1, 1838. He was graduated at Yale in 1859, and led the life of a student in Anglo-Saxon and early English, and a writer in critical and biographical works, till 1862, when he enlisted as a volunteer in the Union army, served as 1st lieutenant of the 126th New York Volunteers, and was mustered out at the close of the war; after 1871 occupied the chair of Professor of English in the Sheffield Scientific School of Yale University. Among his published works are Chaucer's "House of Fame" and "Parlement of Foules"; "History of the English Language" (1879); biography of James Fenimore Cooper in "American Men of Letters" series (1883); his crowning work, which brought him great celebrity, "Studies in Chaucer, his Life and Writings" (3 vols. 1892); "Shakespeare and Voltaire" (1902); "The Standard of Pronunciation in English" (1904); The Standard of Usage in English" (1908); "Shakespeare as Dramatic Artist" (1912). He died in 1915.

LOURDES (lörd), a town of France, in the department of Hautes-Pyrénées, arrondissement of and 6 miles N. N. E. of Argeles, on the Gave-de-Pau, 10 miles W. by N. from Bagnères-de-Bigorre, on the Toulouse and Bayonne railroad; situated at the foot of an almost inaccessible rock, and commanded by a strong castle, now used as a prison; in the neighborhood are marble and slate quarries. In modern times a famous place of pilgrimage, a fact due to the belief that in 1858 the Virgin Mary appeared in a grotto in the neighborhood, above which a magnificent basilica has since been erected. Pop. commune, 8,805.

LOURENCO MARQUEZ (lō-rān'sō mär'kes), one of the 6 districts of the province of Mozambique in Portuguese East Africa, and the name of the capital of the district and province. It is the seat of the governor-general of the province, is located on Delagoa Bay and is the terminus of the Delagoa Bay railway to Pretoria (347 miles) and of a new line, still under construction, to the border of Swaziland. Imports (1916) about $7,000,000; exports (1916) about $1,500,000. Pop. 13,154. See DELAGOA BAY; MOZAMBIQUE; PORTUGUESE EAST AFRICA.

LOUSE, the genus *Pediculus*. The sexes of lice are distinct. The female is oviparous, producing eggs, popularly called nits. The young are hatched in five or six days, and in 18 these are capable of reproduction. Three species are parasitic in certain circumstances on man. The body or clothes louse, *Pediculus corporis* or *vestimentorum;* the head or common louse, *P. capitis;* and the public or crab louse, *P. pubis.* The first species lives in the folds of the clothing in some elderly and uncleanly people. It has the abdomen three times as broad as the thorax.

LOUTH, the smallest county in Ireland situated in the province of Leinster. Its area is 317 square miles and its population (about 60,000) has been decreasing steadily. The soil is excellent both for agriculture and pasture.

LOUVAIN (lö-va*ng*') (German Löwen, Flemish Leuven), a city in the Belgian province of Brabant, 19 miles by rail E. of Brussels; chief industries, bell-founding, brewing, and the manufacture of leather, paper, lace, starch, and chemicals; prior to the World War the city had a town-house, a richly-decorated Gothic building (1448-1469); the Church of St. Peter, with a beau-

tiful flamboyant rood-loft, a wrought-iron chandelier by Quentin Matsys, and some good pictures; St. Gertrude's Church possessing the finest carved oak stalls in Belgium; and the Weavers' Hall (1317), appropriated by the university in 1679. In 891 King Arnulf gained here a great victory over the Northmen, and built a castle against them; it used to be known as Cæsar's Castle; a few fragments of it still remain. In the 14th century the town was rich, prosperous, and large (200,000 inhabitants), due to its cloth manufactures and its position as the capital of Brabant (from 994). In 1382 the townsmen revolted against their rulers, and the harsh punishment meted out to them drove large numbers away to England. The old walls, forming a circuit of 5 miles, have been demolished. A severe blow was struck at the prosperity of Louvain by a terrible visitation of the plague in the 16th century. Pop. about 40,000.

The Germans captured the city Aug. 19, 1914, and held it for six days when forced out by Belgian troops. Re-taken by the Germans, the city was fired and the university, library and other important buildings reduced to ruins.

L'OUVERTURE, TOUSSAINT. See TOUSSAINT L'OVERTURE.

LOUVOIS (lö-vwä), **FRANÇOIS MICHEL LE TELLIER, MARQUIS DE,** the war-minister of Louis XIV.; born in Paris, France, Jan. 18, 1641. His father was Chancellor and Secretary of State in the war department; the son joined him as assistant-secretary in 1662, and became war-minister in 1668. In the drilling of the armies he had a ready agent in Martinet, whose name is not yet forgotten in military life. His labors bore their fruit in the great war that ended with the peace of Nimeguen (1678). During the following years Louvois took a leading part in the capture of Strassburg, in 1681. He died suddenly July 16, 1691.

LOUVRE, the name of a celebrated public building of Paris, situated in the N. part of the city, near the right bank of the Seine. It was originally a hunting lodge, and later a castle, begun about 1204. Charles V. (1364-1380) added some embellishments to it, and brought thither his library and his treasury; and Francis, in 1528, erected that part of the palace which is now known as the gallery of Apollo. Henry IV. laid the foundation of the gallery which connects the Louvre on the S. side with the Tuileries. Louis XIII. erected the center; and Louis XIV., according to the plan of the physician Perrault, the elegant façade toward the E., together with the colonnade of the Louvre. When the great number of works of art seized in Italy by the armies of Napoleon made it necessary to assign a proper place for their reception, the architect Raimond was selected to conduct the work. After the Restoration the work was again brought to a standstill; and nothing was done till after the revolution of 1848. A resolution having been passed by the provisional government in favor of the completion of the whole building, the foundation-stone of the new Louvre was laid July 25, 1852, and the work completed in 1857, at a cost of nearly 6,000,000 francs.

The Louvre now consists of two parts —the old and new Louvre. The former is nearly a square, 576 feet long and 538 wide, and inclosing a quadrangle of about 400 feet square; its E. façade, looking toward the church of St. Germain l'Auxerrois, is a colonnade of 28 Corinthian columns, and one of the finest works of architecture of any age or country. The new Louvre consists of two vast lateral piles of buildings, projecting at right angles from the two parallel galleries, which formerly joined the old Louvre with the Tuileries and formed the E. boundary of the Place du Carrousel. Turning into the Place Napoléon III. they present on each side a frontage of 590 feet, intersected by three sumptuous pavilions intended to accommodate the minister of state, the minister of the interior, and the library of the Louvre. Some of the galleries on the upper stories are set apart for permanent and annual exhibitions of works of art. The total space covered or inclosed by the Louvre is nearly 60 acres. During the World War the chief art treasures were removed from the Louvre and concealed, and elaborate precautions were taken to prevent its injury or destruction by German air-raiders.

LOUŸS, PIERRE, born in 1870, was educated at the Lycée Janson de Sailly. He made a number of journeys to north Africa and founded at 19 the review "La Conque," to which Swinburne, Verlaine, Leconte de Lisle, and Maeterlinck contributed. His novel "Aphrodite," from which ten plays and operas have been drawn in various languages, reached a sale of 320,000 copies. M. Louys's works are: "Astarté" (1892); "Les Chansons de Bilitis" (1895); "Aphrodite" (1896); "La Femme et le Pantin" (1898); "Les Aventures du Roi Pausole" (1901); "Sanguines" (1903); "Archipel" (1906); "Psyché" (1909).

LOVAT, SIMON FRAZER, a Scotch nobleman; second son of Thomas Frazer of Beaufort; born in 1667. In 1699, on the death of his father, he assumed the title of Lord Lovat, to which on the death of the 11th Lord Lovat his father had acquired a disputed claim. To secure the estates he effected a forced marriage with the Dowager Lady Lovat, for which he was outlawed and forced to take refuge in France. After a varied life of intriguing, first on the Hanoverian side and next on the Stuart, and a long imprisonment, his title, which had been objected to in various elections, was decided in his favor by the Court of Session in 1730. On the outbreak of the rebellion of 1745, Lovat acted with his usual duplicity, sending his son to fight for the Pretender, while he himself remained at home, protesting his loyalty to the Hanoverian house. This conduct brought him to trial for treason, and resulted in his execution at Tower Hill, London, April 9, 1747.

LOVEJOY, ELIJAH PARISH, an American abolitionist; born in Albion, Me., Nov. 9, 1802. Soon after his graduation at Waterville, in 1826, he went West, where, after teaching for some time, he became editor of a political journal. Subsequently he joined the Presbyterian Church and was licensed to preach in 1833. He then took editorial charge of the "Observer," a religious weekly published at St. Louis, Mo., and, first a believer in colonization, he gradually became strongly anti-slavery, though always opposing immediate and unconditional abolition. His articles created great excitement, and when his office was finally wrecked by a mob in 1836 he decided to remove his paper to Alton, Ill. Here three presses were destroyed by mobs. The fourth press was placed in a stone warehouse, which Lovejoy and some of his friends defended. The house was surrounded by a mob and the roof set on fire. In attempting a sally Lovejoy was shot and killed, Nov. 7, 1837. A monument was erected to his memory, at Alton, in 1897.

LOVELACE, RICHARD, an English Cavalier poet; born in Woolwich, England, in 1618. He was the eldest son of a Kentish knight of old family, and was educated at the Charterhouse and at Oxford. In April, 1642, he was committed to the Gatehouse at Westminster for presenting to the House of Commons a petition from the royalists of Kent "for the restoring the king to his rights, and for settling the government," and was only released on bail of $200,000. In 1646 he took part in the siege of Dunkirk, and was flung into prison on returning to England in 1648. In 1645 he published "Lucasta." In 1659 his brother collected his poems as "Lucasta: Posthume Poems." He died in London, England, in 1658.

LOVER, SAMUEL, an Irish novelist; born in Dublin, Ireland, Feb. 24, 1797. Starting in life as a painter, his early success secured his election, in 1828, as an academician of the Royal Hibernian Society of Arts. While still engaged as painter, he turned his attention to literature, and produced his celebrated "Legends and Tales Illustrative of Irish Character." Removing to London, in 1827, he published his popular novels, "Rory O'More," "Handy Andy" (his best work), and "Treasure Trove." He also wrote several popular songs and comic operas. In 1847 he visited the United States, returning to England the following year. He died in St. Heliers, July 6, 1868.

LOVETT, ROBERT SCOTT, American railroad president, born in San Jacinto, Tex., 1860. Admitted to the bar in 1882 and two years later became attorney for the Houston East & West Texas Ry. Co. In 1904 he became general counsel for the Harriman railroad interests, and president in 1909. In March, 1918, he became Director of the Division of Additions and Betterments under the U. S. Railroad Administration.

LOW, A(LFRED) MAURICE, an Anglo-American journalist and writer; born in London in 1860. He was educated at King's College, London, and in Austria. Sometime American correspondent of the London "Morning Post," and from 1896 wrote on American topics for the "National Review," London. In 1900 he investigated British labor conditions and in 1903 was appointed by the United States Government to investigate British trade unions and industries. Author of "The Supreme Surrender" (1901); "Protection in the United States" (1904); "American Life in Town and Country" (1905); "Short History of Labor Legislation in Great Britain" (1907); "Americans at Home" (1908); "The American People" (1909-1911); "The Real Truth About Germany" (1914).

LOW, SETH, an American educator; born in Brooklyn, N. Y., Jan. 18, 1850; was graduated at Columbia University in 1870; made a member of his father's mercantile firm in 1875; mayor of Brooklyn in 1881-1885; and was elected president of Columbia University in 1890. In 1895 he erected for that institution a grand university library at a cost of

$1,175,000. In honor of President Low's generosity and in accord with his desire, the trustees of Columbia founded 12 scholarships in the university for Brooklyn boys and the same number in Barnard College for Brooklyn girls, and also agreed to found eight annual scholarships. In 1899 he was appointed by President McKinley a member of the delegation to represent the United States at the International Peace Conference at The Hague. Mr. Low was an unsuccessful candidate for mayor of Greater New York in 1897; and was again nominated for the office on a fusion ticket in 1901. After accepting the nomination he resigned the presidency of Columbia University in order to begin a vigorous campaign, which resulted in his election to the mayoralty. He was defeated in 1903 for re-election by George B. McClellan. He served in important public capacities, and was a member of many learned societies. He died Sept. 16, 1916.

LOW, WILL HICOK, an American figure painter and illustrator. After his early education in Albany, New York, he came to New York City in 1870 and began to illustrate for several magazines. Later he went to Paris, where his art was much influenced by Duran and Millet. When he returned to America in 1877 he became instructor in the art classes at the Cooper Union. In his work in glass painting he was associated with John La Farge. Among his more famous paintings are "Aurora" (Metropolitan Museum, N. Y.) and "Christmas Morn" (National Gallery, Washington).

LOW CHURCH, a term commonly applied in the Church of England to those who form the more moderate party in the Church, having less ambitious notions of its authority and power, and being more tolerant in their conduct toward dissenters—opposed to HIGH CHURCH (*q. v.*).

LOW COUNTRIES, a name applied to the territory occupied by the Netherlands, Belgium, and the Grand Duchy of Luxemburg. The three formerly made up the region known as the Netherlands.

LOWDEN, FRANK ORREN, an American governor; born in Minnesota 1861, educated at Iowa State University, practiced law in Chicago 1887-1906. In 1899 he accepted the professorship of law at Northwestern University. In the years 1900 to 1920 he took an active part in the politics of the Republican party, being a delegate to several of the national conventions. In 1906 he served in Congress, filling out the unexpired term of R. R. Hitt, deceased. In 1916 he was elected Governor of Illinois on the Republican ticket. He was one of the leading candidates for the Republican nomination for the presidency in 1920.

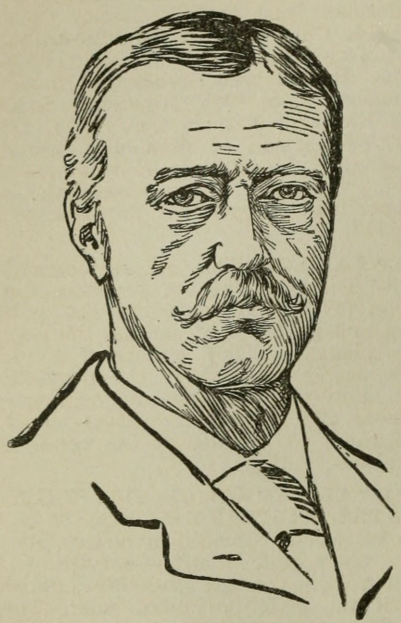
LOWE, SIR HUDSON, a British military officer; the custodian of Napoleon in St. Helena; born in Galway, Ireland, July 28, 1769. Entering the army in 1787, he served in various parts of the Mediterranean, and in 1808 capitulated at Capri to the French. He was for some time attached to the Prussian army commanded by Blücher. On Aug. 23, 1815, he was appointed governor of St. Helena. Napoleon had landed there on Oct. 17 of the same year. His alleged ill-treatment of Napoleon brought much bitter criticism against him. In 1825 he was appointed commander of the forces in Ceylon. He died in London, England, July 10, 1844.

LOWELL, a city and one of the county-seats of Middlesex co., Mass., on the Merrimac river and the Boston and Maine and the New York, New Haven and Hartford railroads, 22½ miles N. W. of Boston, and contains the villages of Ayers City, Belvidere, Bleachery, Centralville, Highlands, Middlesex Village, and Pawtucketville. The city derives immense water power from the falls of the river, and is one of the largest cotton-manufacturing cities in the world. It also has large woolen, carpet, patent-medicine, furniture, tools, hydraulic-press, ammunition and hosiery manufactories and iron machine works. Among the charitable and educational institutions are St. John's Hospital, Lowell Hospital, Old Ladies' Home, St. Peter's Orphanage, Theodore Edson Orphanage, State Normal School, Lowell Textile School, and Rogers Hall School. The principal public buildings are the court house, the city hall, and several fine churches and school houses. There are many public squares; waterworks supplied from the river, thorough sewerage, daily, weekly and monthly periodicals, banks, and electric light and street railroad plants. Pop. (1910) 106,294; (1920) 112,759.

LOWELL, A(BBOTT) LAWRENCE. President of Harvard University, Cambridge, Mass.; born in Boston in 1856 and graduated from Harvard in 1877. He entered the Harvard Law School and practiced law in Boston from 1880 to 1897. In 1900 he became professor of the science of government at Harvard and in 1909 succeeded Charles W. Eliot as president of the university. President Lowell became a trustee of several great

institutions of learning in the United States and received degrees from leading colleges at home and abroad.

In addition to numerous smaller works and essays, President Lowell published in



A. LAWRENCE LOWELL

1896 (revised 1914) "Governments and Parties of Continental Europe" and in 1908 "The Government of England. They constitute as a whole the most profound studies of European government yet made by an American and his "Government of England" is aptly compared with the great work of Bryce on the American government.

LOWELL, AMY, American poet; born in Brookline, Mass., in 1874, she was educated in private schools, and brought out her first volume, "A Dome of Many-Colored Glass," in 1912. Two years later appeared "Sword Blades and Poppy Seed," and these were followed by "Six French Poets" (1915); "Men, Women, and Ghosts" in free verse (1916); and "Tendencies in Modern American Poetry" (1917). Is member of the Poetry Society of America, and N. E. Poetry Club.

LOWELL, FRANCIS CABOT, an American merchant, son of John Lowell (1743-1802); born in Newburyport, Mass., April 7, 1775. He acquired celebrity as being the first to establish the cotton manufacture in the United States, and, also, as the founder of the town which bears his name, and which has since become the chief seat of textile manufactures in this country. He died in Boston, Mass., Sept. 2, 1817.

LOWELL, JAMES RUSSELL, an American author; born in Cambridge, Mass., Feb. 22, 1819; was graduated at Harvard College in 1838. In January, 1855, he succeeded Henry W. Longfellow as Professor of Modern Languages in Harvard College. He became a high authority in old French and Provençal poetry, was the first editor of the "Atlantic Monthly" (1857), and joint editor with Prof. Charles Eliot Norton of the "North American Review" in 1863-1872. He was United States minister to Spain in 1877-1880 and to Great Britain in 1880-1885. During his residence in London he was elected Lord Rector of St. Andrew's University in Edinburgh. His works include: "Conversations on Some of the Old Poets" (1845); "Poems" (1848); "The Biglow Papers" (1848); "Life of Keats" (1854); "Poetical Works" (2 vols. 1858); "The President's Policy" (1864); "Ode recited at the Commemoration of the Living and Dead Soldiers of Harvard University" (1865); "Democracy and other Addresses" (1887); etc. He died in Cambridge, Mass., Aug. 12, 1891.

LOWELL, PERCIVAL, an American author and astronomer; born in Boston, Mass., March 13, 1855. He was graduated from Harvard in 1876, and spent some time in Japan and Korea. He established the Lowell Observatory at Flagstaff, Ariz., in 1894. Among his works are: "Chosön, a Sketch of Corea" (1886); "The Soul of the Far East" (1888); "Mars" (1895); "Annals of the Lowell Observatory" (1898-1900); "Mars and Its Canals" (1906); "Mars as the Abode of Life" (1908); "The Evolution of Worlds" (1909). Died in 1916.

LOWELL INSTITUTE, an institution founded by John Lowell who in 1836 left $250,000 for the maintenance and support of public lectures upon philosophy, natural history, and the arts and sciences. Edward Everett delivered the first lecture in 1839 and since that time various prominent men have continued them. The institute now conducts classes for workingmen, as well as special classes in drawing and science for teachers. The general management is under the control of one trustee, who by the terms of the will must be of the Lowell family. A. Lawrence Lowell is at present trustee.

LOWER AUSTRIA, formerly a crownland of Austria, in the eastern part of the Archduchy of Austria, and now part

of the Austrian Republic. The capital city is Vienna itself. The region, which is both industrial and agricultural, has an area of 7,654 square miles, a mixed population, of which Germans predominate, numbering about 3,600,000 before the war.

LOWER CALIFORNIA, a peninsula on the Pacific coast of North America, extending about 750 miles S. of California; area 58,328 square miles; pop. about 53,000. It belongs to Mexico and, with the exception of a few spots, is a sterile and unproductive region. Chief towns are La Paz, the capital, Loretto, and Rosario.

LOWESTOFT, a municipal borough and seaport on the Suffolk coast, England, 118 miles N. E. of London, and 40 from Ipswich; has of late years rapidly grown in favor as a watering-place; the older part, which lies to the N., is built on a cliff facing the sea, on its summit being a lighthouse (1874) 123 feet above the sea-level, while at its base, on the Ness—the most E. point of land in England—stands another lighthouse (1866); the modern part, which has a fine esplanade 800 yards long, extends S. into the parish of Kirkley, and is separated from the old town by the harbor, formed partly by two piers extending seaward 1,300 feet, and partly by Lake Lothing. In 1643 Cromwell entered the town at the head of 1,000 troopers, and, seizing several royalists, sent them prisoners to Cambridge; it was partially destroyed by fire in 1644; a great naval engagement took place off the coast June 3, 1665, when the Dutch were defeated with loss of 18 ships; George II. landed here on his return from Hanover, June 14, 1736. During the war the town was shelled by German boats and aeroplanes a number of times. Pop. (1918) 37,886.

LOWICZ, Poland, town on right bank of the Bzura, 50 miles W. S. W. of Warsaw, the scene of heavy fighting during the German drives on Warsaw during 1914-1916. The Germans erected heavy fortifications. It is a manufacturing center for soap, candles and leather goods, and contains large flour mills. Pop. about 14,500.

LOWTHER, JAMES WILLIAM, an English politician born in 1855. Educated at King's College, London, and Cambridge University, where he won honors in classical and law tripos. Became a barrister in 1879, a Bencher in the Middle Temple in 1906. Elected a Member of Parliament for Rutland in 1883. Contested Mid Cumberland in 1885. Appointed 4th Charity Commissioner in 1887. Under-Secretary for Foreign Affairs in 1891. Represented Great Britain at the International Conference at Venice in 1892. Chairman Quarter Sessions for Cumberland 1900. Alderman East Suffolk County Council in 1914. Chairman of Committee on Ways and Means, and Deputy Speaker in 1895-1905. He has been Speaker of House of Commons since 1905. Chairman Speaker's Electoral Reform Conference 1916-1917. Chairman of Boundary Commissions of Great Britain and Ireland in 1917. Chairman Royal Commission on Proportional Legislative Representation in 1918.

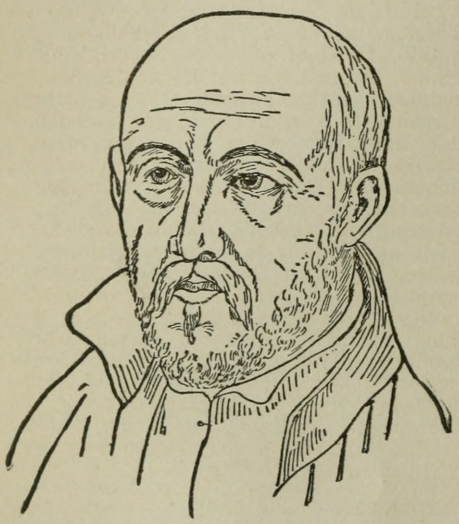
LOYALISTS, those persons commonly called Tories who in the American Revolution (1775-1783) supported the British king and government against the revolting colonists. They comprised in numbers nearly a third of the population, and many of them were among the best citizens of the colonies. Great numbers emigrated to Canada at the conclusion of peace in 1783.

LOYAL LEGION OF THE UNITED STATES, MILITARY ORDER OF THE, the first society formed by officers honorably discharged from the service of the United States in the Civil War, founded April 15, 1865, in Philadelphia. There are State Commanderies in Pennsylvania, New York, Maine, Massachusetts, California, Wisconsin, Illinois, District of Columbia, Ohio, Michigan, Minnesota, Oregon, Missouri, Nebraska, Kansas, Iowa, Colorado, Indiana, Washington, Vermont, and Maryland.

LOYALTY ISLANDS, a group of islands in the South Pacific, E. of New Caledonia, the chief of which are Lifu, Maré, and Uvea. The islands, about 800 square miles in extent, have been French territory since 1864. Population estimated at 15,000.

LOYOLA, IGNATIUS (lō-yō'lä), original name INIGO LOPEZ DE RECALDE, a Spanish soldier and prelate, the founder of the order of the Jesuits; born in the castle of Loyola, Guipuscoa, Spain, in 1491. He was descended of a noble Biscayan family. He was attached in his youth as a page to the court of Ferdinand and Isabella, and trained up in all the vices and frivolities peculiar to his position. When still a young man he entered the army, and during the defense of Pampeluna in 1521 against the French he was severely wounded, and a long and tedious confinement was the result. The only books he found to relieve its tedium were books of devotion

and the lives of saints. This course of reading induced a fit of mystical devotion in which he renounced the world, made a formal visit to the shrine of the Virgin at Montserrat, and vowed himself her knight (1522). After his dedication he made a pilgrimage to Rome and Jerusalem, and from 1524 to 1527 attended the schools and universities of Barcelona, Alcala, and Salamanca. In 1528 he went to Paris, where he went through a seven years' course of general and theological training. Here in 1534 he



IGNATIUS LOYOLA

formed the first nucleus of the society which afterward became so famous, François Xavier, Professor of Philosophy, Lainez, and others having in conjunction with Loyola bound themselves together to devote themselves to the care of the Church and the conversion of infidels. Rome ultimately became their headquarters, when Loyola submitted the plans of his new order to Paul III., who, under certain limitations, confirmed it in 1540 (see JESUITS). Loyola continued to reside in Rome and govern the society he had constituted till his death, July 31, 1556. He was beatified in 1609 by Paul V., and canonized in 1622 by Gregory XV.

LOYOLA UNIVERSITY, Chicago, U. S. A. In 1869 the Rev. Arnold Damen, S. J., associated with other Jesuit priests, founded the St. Ignatius College, which became Loyola University, the oldest and largest Catholic institution of high learning in Chicago. St. Ignatius College was at first located in the suburbs of the city, but it increased so rapidly in popularity and influence that in 1909 the Board of Trustees purchased 20 acres on the north shore where the institution would have room to expand. Loyola University was incorporated in 1909. A Law Dept. was opened in 1908. In 1909 the University became associated with the Illinois Medical College and with the Bennett Medical College in 1910. The Chicago College of Medicine and Surgery was purchased in 1917, and the Medical Dept. of the University now bears that name. In 1913 a Department of Sociology was opened. A junior college of engineering and two high schools are controlled by the University.

LOYSON, CHARLES. See HYACINTHE, PÈRE.

LOZÈRE (lō-zār'), a department in the S. of France, comprising the arrondissements of Mende, Florac, and Marvejols; area 1,996 square miles; pop. about 125,000; forms the S. E. extremity of the central uplands of France, and embraces the highest peaks of the Cévennes (Pic de Finiels, 5,584 feet); in the mountains the climate is severe, and little grain is produced; chief products, potatoes, chestnuts, fruits, hemp, and flax; cattle and sheep are extensively reared, and silkworms bred. The minerals are silver, lead, and antimony. The department contains some of the grandest scenery of France in the eroded limestone districts of the "Causses." Important prehistoric remains have been found in the caverns. Capital, Mende.

LOZNITZA, Serbia, a town or village of Serbia, on the right bank of the Drina, 65 miles S. W. of Belgrade. The town acquired prominence as the scene of the first heavy fighting of the World War in the Balkans. It was at this point that the Austrian armies, under General Piotorek, made the first attack in their first invasion of Serbian territory, on Aug. 12, 1914, and so began the battle of the Jardar river. Loznitza was also the center of all the military operations that took place in this section of Serbia during the following eighteen months, which finally terminated in the conquest of the country by the troops of the Central Powers.

LUBBOCK, SIR JOHN, an English archæologist, naturalist and politician; born in London, England, April 30, 1834. He joined his father's banking business in 1848; became a partner in 1856; entered Parliament in 1870 as member for Maidstone; after 1880 represented London University. He was a recognized authority on financial and educational questions. He was also distinguished as

a man of science, being author of "Prehistoric Times"; "Origin of Civilization"; "Origin and Metamorphoses of Insects"; "British Wild Flowers in their Relation to Insects"; "Ants, Bees and Wasps"; "The Origin of Civilization and the Primitive Condition of Man"; "Buds and Stipules" (1898); "Marriage, Totemism and Religion" (1909). He died in 1913.

LÜBECK (lü'bek), a free city and state of Germany, on the Trave, about 10 miles from Travemünde, at its mouth in the Gulf of Lübeck, in the Baltic, 36 miles N. E. of Hamburg; lat. 53° 52′ N., lon. 10° 45′ 5″ E.; area of state, 115 square miles; pop. about 100,000; the land is very productive; chief industry, cattle raising. The city is built on a ridge between the Trave and the Wakenitz; environs well wooded, and enlivened with cheerful villas; streets wide, the houses generally old, built of stone, and with their gable ends toward the street, are generally lofty, six or seven stories being quite common; has schools of surgery, navigation, etc., public library of 130,000 volumes. Prior to the World War Lübeck had large commercial interests, chiefly with the north and west of Europe.

Its date of foundation is uncertain, but it existed in 1140, was ceded to the dukes of Saxony in 1158, taken by the Danes in 1201; was made a free imperial city in 1226, when the Danish garrison was expelled; became the head of the Hanseatic League in 1241. The dissolution of the League marked the epoch of its decline. It was annexed to the empire in 1810, and regained its freedom after the battle of Leipsic in 1813.

LUBLIN (lö'blin), the capital of a Polish government (area 6,501 square miles; pop. about 1,575,000), on a subtributary of the Vistula, 96 miles S. E. of Warsaw; has a 13th century cathedral and manufactures of tobacco, beer, candles, soap, etc., and a large trade in corn and wool. It was plundered by the Mongols in 1240, 1344, and 1477; from the end of the 14th to the end of the 16th century was the principal commercial town between the Vistula and the Dnieper; except the gates, nothing now remains of its former walls. Here was signed in 1569 the treaty of union between Lithuania and Poland. Lublin was captured by the Russians in 1831. The city was in the area of active warfare during the World War, and in 1914 a Russian army defeated Austrian forces rere. Pop. about 70,000.

LUBRICANT, a substance inserted between moving contact parts of a machine for the purpose of reducing friction and preventing abrasion. The substances used as lubricants vary greatly with the use to which they are put—solids such as soapstone or graphite, used to lubricate surfaces subjected to high pressure and running at low speed are one extreme; a light oil such as castor oil, used for the high speed, high temperature airplane motor, is the other extreme. The requirements of a good lubricant are: low coefficient of friction, stability under high temperature (high flash point), as fluid a body as possible to fulfill the requirements, since a high viscosity means a high coefficient of friction, freedom of acids or other injurious impurities which would react chemically with the metal of the bearing to which it was applied, and freedom from impurities which cause gumming. Various lubricants, designed for special purposes, by mixing mineral, animal or vegetable oils, are on the market.

Among the methods of lubrication are direct application by hand; the gravity system, in which the oil flows through a pipe from a tank to the bearing by gravity; various mechanical systems in which the oil is circulated by means of a pump from a tank to the bearings, and frequently through a strainer back into the tank; and the splash system, in which some moving part of the motor splashes oil from a closed case over all bearing surfaces.

LUCANIA (lū-kā'ni-ä), a province of ancient Italy, S. E. of Calabria, and bordering on the Gulf of Tarentum. It was inhabited by an Oscan people, and corresponds nearly to the present province of Potenza and part of Salerno.

LUCAS, EDWARD VERRALL, an English writer on travel and essayist. Born in 1868 at Brighton and educated in London, he was first employed by the Sussex "Daily News." Later he was associated with the "Globe," the "Academy," and finally with "Punch." Among his works are essays written after the style of Lamb, anthologies of English poetry, books for children, and works of biography and travel. Among his best known publications are "Life of Charles Lamb" (2 vols., 1905), "Anne's Terrible Good Nature, and Other Stories for Children" (1908), "The Slow Coach" (1910), "A Wanderer in Venice" (1914).

LUCBAN, a town on the island of Luzon, in the province of Tayabas. The chief industry is the manufacture of straw hats and mats. Rice is also grown on the terraces of the hills. Pop. about 12,500.

LUCCA (lök'kä), called "the Industrious," chief town of an Italian province, situated on a plain, bounded by picturesque hills and irrigated by the Serchio, 14 miles by rail N. E. of Pisa; has a great trade in olive oil and silk. The cathedral of St. Martin, begun in 1063, has a cedar crucifix reputed to have been brought to Lucca in 782; this Volto Santo ("Sacred Countenance") is mentioned by Dante; the church contains also several fine paintings, the tomb of Maria Guinigi, and valuable archives; there are nearly 40 other churches, some dating from the 7th and 8th centuries. A splendid aqueduct (1820) supplies the town with water from the Pisan hills. The municipal buildings (1578) contain a valuable collection of paintings; the town is exceptionally rich in artistic and scientific institutions, and the environs abound in delightful villas. Lucca (ancient Luca) was made a Roman colony in 177 B. C. The town had a most checkered history down to 1369, when it became an independent republic, which lasted till 1797. In 1805 it was erected into a principality by Napoleon for his sister, Elisa Bacciochi, and in 1815 passed to Maria Louisa of Spain, Queen of Etruria. Her son, Charles Louis, ceded it to Tuscany in 1847, on obtaining possession of Parma and Piacenza. In a charming valley, 16 miles N. of the town, are situated the mineral baths of Lucca, which have been famous since the 15th century. Pop. about 80,000. The province is famed for the fertility of its soil and the superiority of its agriculture.

LUCE, STEPHEN BLEECKER, an American naval officer; born in Albany, N. Y., March 25, 1827; served on the Pacific Coast in the Mexican War; was promoted commander in 1866; captain in 1872; commodore in 1881; and rear-admiral in 1885; was retired the same year. He was naval editor of the "Standard Dictionary" and author of "Naval Songs" (1889); "Seamanship" (used as a text book at the United States Naval Academy, 1898); "Patriotic and Naval Songster"; etc. He died in 1917.

LUCENA (lö-thā'nä), a town of Spain, 36 miles S. by E. of Cordova; famous for its wine and breed of horses. Pop. about 21,000.

LUCERA (lö-chā'rä) (the ancient Luceria, of the Samnite War), a town of southern Italy, 12 miles N. W. of Foggia; has a cathedral dating from 1302, and a famous ruined castle of Frederick II. Pop. about 17,000.

LUCERNE (lü-sārn') the capital of a Swiss canton, 59 miles S. E. of Basel, 147 S. S. E. of Strassburg, and 177 N. N. W. of Milan; very beautifully situated at the point where the Reuss issues from the N. W. extremity of the Lake of Lucerne, and partly surrounded (on the N.) with mediæval towers. Near the lake, rising from the middle of the Reuss, is an old tower, which is said to have been a lighthouse (*lucerna*) in Roman times, whence the name of the town. Outside one of the gates is the Lion of Lucerne, hewn (1821) out of the solid rock after a model by Thorwaldsen, a monument to the Swiss guard who perished at the Tuileries in 1792. Near by is the Glacier Garden, with rocks illustrating the action of ice. Pop. commune, about 45,000. The canton is bounded by Aargau on the N., Zug and Schwyz on the E., Unterwalden on the S. E., and Bern on the S. and W.; area, 579 square miles; pop. about 170,000; is fruitful in the valleys; in the more mountainous parts the rearing of cattle is carried on to a great extent, large quantities of cheese being made. The highest elevation is 6,998 feet, a peak of Mount Pilatus. The inhabitants are mostly of German race and language, and belong to the Roman Catholic Church. The canton threw off the yoke of Austria in 1332, and, joining Schwyz, Uri, and Unterwalden, formed the nucleus of the future Swiss Confederation. See SWITZERLAND.

LUCERNE, LAKE OF, called also VIERWALDSTÄTTERSEE ("Lake of the Four Forest Cantons"—Uri, Unterwalden, Schwyz, and Lucerne), one of the most beautiful sheets of water in Europe. In shape it resembles roughly a cross with a crumpled stem; its shores are mostly steep and rocky. Length from Lucerne to Flüelen, 23 miles; average breadth, about 1½ miles; area, 44 square miles. The chief places on its banks are Lucerne, Küssnacht, and Alpnach at the N. W., and Flüelen near its S. W. extremity. It forms part of the St. Gothard route, and is navigated by steamboats, but is liable to sudden and violent storms. See TELL, WILLIAM.

LUCHU, LIU-KIU, a chain of 55 islands, belonging to Japan. They extend in a S. W. direction from Coluet Strait toward Formosa. The total area is 941 square miles. The climate is healthful and the soil fertile. Sugar is the most important crop, but sweet potatoes, rice, barley, wheat, and beans are also produced. The principal industry is the manufacture of cotton cloth for native wear. The population is about 500,000.

LUCIFER, the morning star. A name given to the planet Venus when she

appears in the morning before sunrise. Also a name commonly, though inappropriately, given to the prince of darkness; Satan. Also a term originally applied to matches tipped with a mixture of chlorate of potash and sulphuret of antimony, which were inflamed by friction on a piece of emery paper. These have been superseded by a variety of mixtures containing phosphorus. In ornithology, a humming bird of Mexico and the S. W. of the United States. It has a forked tail and its throat feathers form a ruff.

LUCIUS II., Pope, succeeded Celestine II. in 1144, led out his troops to suppress a disturbance, and was killed by a paving-stone, in 1145.

LUCIUS III., Pope (1181-1185). He was the first Pope elected solely by the cardinals, in consequence of which his reign was very turbulent. He died an exile in Verona in 1185.

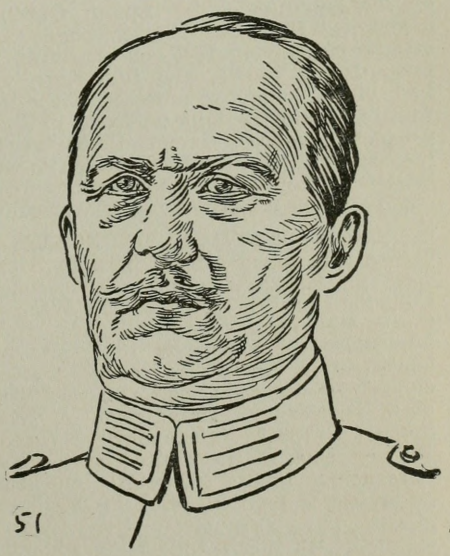
LUCKNOW (luk'nou), a city of Hindustan, capital of the former kingdom of Oude, on the Gumti, a tributary of the Ganges, 150 miles N. W. of Benares, and 265 S. E. of Delhi. It is divided into three parts: The first is the city proper, containing the shops and private dwellings of the inhabitants, the streets very narrow and sunk below the level of the houses, and very filthy. The second is near the Gumti toward the S. E. The third quarter adjoins the Gumti on the N. W. and consists chiefly of religious buildings, the styles of which are more purely Oriental. Lucknow is remarkable for the defense made by 300 British soldiers while besieged in the residency of the city for four months in 1857 during the Sepoy rebellion. Pop. about 260,000.

LUCRETIA, the wife of L. Tarquinius Collatinus, famous for her heroic virtue. She was shamefully outraged by Sextus Tarquinius, whereupon she summoned her husband and a group of friends, and, after making them take a solemn oath to drive out the hated race of Tarquins from the city, plunged a knife into her heart. Of the poetic elaborations of the story the most famous is the "Rape of Lucrece" of Shakespeare's youth.

LUCRETIUS, TITUS CARUS, one of the greatest Roman poets; born in Rome, probably about 96 B. C. He was author of the poem entitled "De Rerum Natura" (On the Nature of Things), in which he explains the atomic theory of Leucippus, and the moral and religious doctrines of the philosophy of Epicurus. He died Oct. 15, 55 B. C.

LUCULLUS, LUCIUS LICINIUS, a Roman consul and commander, celebrated for his military talents and luxurious style of living; born about 115 B. C. He first distinguished himself in the Social War, and afterward defeated Hamilcar in two naval battles. In 74 B. C. he obtained the consulship and the command of the expedition against Mithridates. In 71 B. C. he finally broke up the hostile army, and Mithridates himself sought protection in Armenia, where Tigranes refusing to surrender him to the Romans, Lucullus attacked that monarch, and completely subdued him. On an occasion of a mutiny of his soldiers, he was deprived of the chief command, and recalled. From this time, Lucullus remained a private individual, spending in magnificent feasts, splendid gardens, parks, and fish-ponds, and all kinds of luxurious indulgence, the immense riches which he had brought with him from Asia. He died about 57 B. C.

LUDENDORFF, ERICH VON, German military leader, born in Prussian Poland, 1865; graduated from the Imperial Military Academy, in 1895, and



FIELD-MARSHAL VON LUDENDORFF

was soon after attached to the General Staff, in Berlin. He rapidly won promotion through his zeal for military efficiency. In 1912 he was at the head of a department of the General Staff, with the rank of Colonel. When the war broke out, in 1914, he held the rank of Major-General and was practically head of the German military organization. It was he who recalled Hinden-

burg from retirement and appointed him to the command of the German armies in East Prussia, after the disastrous initial defeat suffered at the hands of the Russians, shortly after hostilities broke out. From then until the final collapse of the German military organization, in 1918, Ludendorff retained his commanding position, nor was he greatly discredited in the minds of the German Imperialists by the final defeat of his armies.

LÜDENSCHEID, Prussia, Germany, a town in Westphalia, 33 miles N. E. of Cologne. It is of considerable importance as a manufacturing center for hardware, musical instruments, canes, and cotton goods. Pop. about 35,000.

LÜDERITZ BAY, Southwest Africa, on whose shore the settlement of Angra Pequeña was established by a German trader, Lüderitz, in 1883. It became the center of the German Southwest African possessions, the harbor, though poor, being the best in the region. Lüderitz Bay was one of the first settlements to be lost by the Germans after the outbreak of the war, in 1914. The place was abandoned by the German forces in the second week of August, 1914, after as much of the harbor facilities as possible had been destroyed. Later this point was made the base of a South African army under General Sir Duncan Mackenzie in its operations against the German forces in the interior.

LUDHIANA (lö-dē-ä'nä), capital of the Ludhiana district (area, 1,375 square miles; pop. 650,000), in Punjab, India, situated 8 miles from the Sutlej, and the North Western railroad; is a thriving grain mart and has manufactures of Cashmere shawls, scarfs, cottons, turbans, furniture, and carriages. The chief feature of the place is the shrine of a Mohammedan saint which attracts a large concourse of pilgrims every year. Pop. about 50,000.

LUDINGTON, a city and county-seat of Mason co., Mich., on Lake Michigan and the Père Marquette and the Ludington and Northern railroads; 84 miles N. E. of Milwaukee. It is in a salt and fruit region; has an excellent lake harbor; regular passenger and steamboat connection with all important lake ports; and numerous lumber-working, salt-making, foundry and machine shop establishments. There are electric light plants, high and graded public schools, public library, street railroads; Holly system of waterworks, National banks, and newspapers. Pop. (1910) 9,132; (1920) 8,810.

LUDLOW, a market-town and municipal borough of Shropshire, England, at the Corve's influx to the Teme, 28 miles S. of Shrewsbury. It is a very old and interesting place, with two noble monuments of antiquity: First, the massive Norman keep, 110 feet high, of the castle, where Prince Arthur wedded Catharine of Aragon, and died less than five months afterward; where, in the banqueting-hall, Milton produced his "Comus," and where Butler wrote "Hudibras"; captured by King Stephen, the Lancastrians, and the Roundheads, it was finally dismantled in 1689. Secondly, the cruciform collegiate church (restored in 1863). Perpendicular in style, with a tower 130 feet high. The grammar school, founded in 1282, and refounded in 1552, is almost the oldest in Great Britain; and one of seven gates still remains. Pop. about 6,000.

LUDLOW, EDMUND, an English republican; born in Maiden Bradley, Wiltshire, England, in 1617. He studied at Trinity College, Oxford; and at the outbreak of the Civil War was a student in the Temple. He volunteered in Essex's lifeguards, saw service under Waller and Fairfax, was returned in his father's place to Parliament for Wiltshire in 1645, sat among the king's judges, and had a place in the council of state of the commonwealth. In 1651 he was sent to Ireland as lieutenant-general of horse. He refused to recognize Cromwell's protectorate, and till his death took no further part in public affairs. Returned to Parliament for Hindon in 1659, he urged the restoration of the Rump, held command again for a few months in Ireland, and was nominated by Lambert to the committee of safety. Four months after the Restoration he fled to France for safety, making his way to Vevay, Switzerland, where he lived in security. After the Revolution he returned to England, but, threatened with arrest, he returned to Vevay, and died there in 1692.

LUDLOW, WILLIAM, an American military officer; born in Islip, L. I., Nov. 27, 1843; was graduated at the United States Naval Academy and appointed a 1st lieutenant in the Engineer Corps in 1864; served through the remainder of the war; was president of the United States Nicaragua Canal Commission in 1895; commissioned Brigadier-General of volunteers and was made chief engineer of the army destined for Cuba, in May, 1898. During the Santiago campaign he commanded the 1st Brigade, 2d Division, of the American army, and participated in the battles of El Caney

and San Juan Hill. He was promoted Major-General of volunteers, Sept. 7, 1898; was military governor of Havana, from Dec. 12, 1898, to May 1, 1900; promoted Brigadier-General, U. S. A., Jan. 21, 1900; and appointed president of the War College Board, May 1, 1900. He was the author of "Exploration of the Black Hills and Yellowstone Country" and several military reports. He died Aug. 30, 1901.

LUDWIG. See LOUIS.

LUDWIGSBURG (löd'vigs-börg), a town of Württemberg, 8 miles N. of Stuttgart; formerly the second royal residence, and one of the principal garrison towns; has a military school and a castle, with picture gallery and splendid gardens. It grew up round a hunting castle founded in 1704 by Duke Eberhard Ludwig. It was the birthplace of D. F. Strauss, Justinus Kerner, Möricke, and Friedrich Vischner. Pop. about 25,000.

LUDWIGSHAFEN (-hä-fen), a town of the Bavarian Palatinate, on the Rhine, opposite Mannheim; has grown rapidly owing to its manufactures (soda, aniline dyes, wagons, machinery, bridge material, fertilizers, etc.), and its trade in iron, timber, coal, and agricultural products. It was granted town rights in 1859. Pop. about 85,000.

LUFBERY, RAOUL SERVAIS, American aviator; born in 1884 and spent his early years in New Haven, Conn. His mother died when he was young and he was adopted by a family at Bourges, France. At 13 he ran away and wandered in Egypt, Tripoli, and elsewhere, turning his hand to many trades. In Asia he met the aviator Marc Pompe, who trained him as assistant. Enlisted in World War under French flag, decorated with Legion of Honor, March, 1917, after bringing down 6 enemy machines. Killed in 1918 near Toul in combat with German biplane, after bringing down 16 airplanes in all.

LUGANO (lö-gä'nō), a town in the Swiss canton of Ticino, on the N. W. shore of Lake Lugano, 49 miles N. by W. from Milan; is in appearance thoroughly Italian, villas studding the lower slopes of the hills embosomed in vineyards, olive and orange groves, chestnut and walnut woods; the church of Santa Maria degli Angioli has interesting works of art by Luini; and an important cattle fair is held here in October. Mazzini and the Italian patriots made Lugano their headquarters for some time after 1848. From Monte Salvatore (2,982 feet), in the vicinity, a magnificent view may be obtained. Pop. about 14,000.

LUGANO, LAKE OF, also called CERESIO (che-rā'zē-ō), a sheet of water at the S. foot of the Alps, 889 feet above sea-level; length, 14½ miles; average breadth, 1¼ miles; area, 18½ square miles. The depth varies very greatly, the maximum being 945 feet, while the average is only about 246 feet. The lake is provided with steamboats.

LUGANSK, Russia, a town on the Lugan, 240 miles E. of Ekaterinoslav. It was important before the World War as one of the larger manufacturing centers of the Donetz Basin, its iron foundries being over a hundred years old. Pop. about 60,000.

LUGDUNUM, the ancient name of Lyons and of Leyden.

LUGGER, a small vessel, carrying two or three masts with a lugsail on each, and a running bowsprit, on which are set two or three jibs.

LUGO (lö'gō) (Lucus Augusti of the Romans), capital of a province in the N. W. of Spain, situated on the Minho, 72 miles by rail S. E. of Corunna; has a cathedral built in 1129-1177, and manufactures of linen and leather; is still surrounded with old walls, high and thick, with towers; and was celebrated as early as the time of the Romans for its warm sulphur baths. Pop. about 35,000. Also the province, a mountainous but agricultural region, drained by the Minho and its tributary the Sil, and rich in minerals that are but little extracted; area, 3,814 square miles; pop. about 500,000.

LUGO, a town of Italy, 18 miles W. of Ravenna; has a trade in corn, hemp, wine, and a celebrated fair (all September). Pop. about 30,000.

LUGOS, a city of Hungary, the capital of the county of Krassó-Szörény. It is on the river Temes. Prior to the war, the vineyards were extensively cultivated and wine was the principal export. There were also manufactures of lumber, linen and silk. Pop. about 20,000.

LUGSAIL, a four-cornered sail bent to a yard, which is slung at a point two-thirds of its length from the peak.

LUIZ. See LOUIS.

LUKE, a New Testament evangelist. In Col. iv: 14, he is called "Luke the beloved physician." In Philemon he is called Lucas, and described as one of St. Paul's fellow-laborers, and when "Paul

was ready to be offered" (II Tim. iv: 6), he adds, "Only Luke is with me." Identifying him with the writer of the Acts of the Apostles, his use of the pronoun "we," commencing with xvi: 10, shows that he joined Paul at Troas and accompanied him to Philippi (11-17). The resumption of the pronouns "he" and "they" (xvi: 19, xvii: 1, 17, etc.) shows that he remained at Philippi till the return of the apostle thither (xx: 6). He accompanied him on his subsequent missionary journeys (xx: 13-15, xxi: 1, etc.), was with him in his shipwreck (xxvii: 3, 27, xxviii: 2, 10), and his subsequent voyage to Rome (13-16). There is no trustworthy information as to the remainder of St. Luke's life.

The Gospel according to St. Luke, in the New Testament canon, the third Gospel. The writer had his information from those who "from the beginning were eyewitnesses and ministers of the word" (Luke i: 2), implying that he was not himself an eyewitness of the events that he records.

There exists, or rather, is recoverable from the writings of Justin Martyr, Irenæus, Tertullian, and Epiphanius, a Gospel issued by the celebrated Gnostic, Marcion, so related to that of St. Luke, that Marcion's Gospel must have been an abridgment of St. Luke's, or Luke's an expansion of Marcion's.

Marcion is believed to have begun to teach in Rome about A. D. 139 to 142 (Sanday), or 138 (Volkmar), or 130 (Tischendorf). "At that time St. Luke's Gospel had been so long published that various readings of it had already arisen."

The incidents recorded are not in chronological order. There is a marked superiority to Jewish caste-prejudice or to ceremonial bondage. It is the Gospel that tells of the Prodigal Son (xv: 11-32), the Good Samaritan (x: 30-37), the Pharisee and the Publican (xviii: 10-14). The third Gospel is exactly such a work as, under Divine inspiration, might be supposed to emanate from the companion of St. Paul.

LUKS, GEORGE BENJAMIN, painter; born in Williamsport, Pa., in 1867, he received his first art education at the Pennsylvania Academy of Fine Arts and the Düsseldorf Academy, and then became a student in Paris and London. He was war correspondent and artist for the Philadelphia "Bulletin" in Cuba in 1895-1896, and has since turned out considerable work. He won the Temple gold medal of the Pennsylvania Academy of Fine Arts and is a member of the National Association of Portrait Painters.

LULEÅ, Sweden, a port on the Gulf of Bothnia, at the mouth of the Lule-Elf. It was modernized after being burned in 1887; since then it has acquired importance as an export point for Gellivara iron ore. Pop. about 10,000.

LULONGO, a river in Africa, rising in the nortr-central part of the Belgian Congo and flowing in a westerly direction into the Congo river at Lulongo.

LUMBAGO, rheumatism of the muscles of the loins, with sudden and severe pain, sometimes extending to the ligaments underneath the muscles.

LUMBER INDUSTRY, the production of and trade in sawn timber for building purposes. The chief countries engaged in this industry are the United States, Canada, Russia, Hungary, Germany, Sweden, and France, to which may be added Brazil, British Guiana, Mexico, and other tropical countries as the producers of the hardwoods, such as mahogany, cyprus, etc. In France, Sweden, and especially Germany, the industry differs from that in the United States in that it includes the cultivation of the trees from which the timber is cut, the natural forests having long ago been depleted. The unlimited license hitherto given the cutting of timber in the United States has of recent years brought appreciably nearer the need of a similar organization of the production. The first step in this direction has already been taken in the establishment of the Forestry Service, under the jurisdiction of the Department of Agriculture, whose function it is to guard the national forests against fire, destructive insects and diseases and otherwise to encourage the growth of marketable timber, a certain amount of which is cut and sold each year under the supervision of the Bureau of Forestry. Because of this service the depletion of the timber lands of the country has been considerably checked.

The resources of the United States in marketable timber were estimated as follows in 1913: the total area of forests still uncut amounted to 545,000,000 acres; about 1,013 billion board feet of timber was available in the Pacific Northwest; 634 billion board feet in the South, mostly white pine; about 100 billion board feet in the Lake States, and 450 billion board feet scattered elsewhere throughout the country. Aside from this there was 600 billion board feet under the control of the Federal Government, on the national reservations, including Alaska, with another 90 billion on State government reservations. The production of ordinary building timber during

1912, the last year of normal conditions in the industry, amounted to 40 billion board feet, which does not include shingles, laths, etc. During the war, however, the demand for lumber for the shipbuilding industry caused great inroads on our reserves of white pine, spruce, etc. The result has been a notable shortage of supplies for ordinary building purposes, as well as a shortage of wood for the production of paper.

LUMINOUS PAINT, a paint containing phosphorus, which after exposure to strong light becomes luminous in the dark for a time.

LUMMIS, CHARLES FLETCHER, an American author; born in Lynn, Mass., March 1, 1859. He was a resident of Los Angeles, Cal. He was devoted to the archæology and history of the aboriginal tribes of the Southwest. Among his works are: "The Land of Poco Tiempo"; "The Spanish Pioneers"; "The Man Who Married the Moon"; "The Gold Fish of the Gran Chimú"; "A New Mexico David, and Other Stories"; "The King of the Broncos" (1897); "The Enchanted Burro" (1897); "The Awakening of a Nation" (1898); "My Friend Will" (1911).

LUMP FISH, or **SUCKER** (*Cyclopterus lumpus*), an acanthopterygious fish, so named from the clumsiness of its form. The back is arched and sharp, the belly flat, the body covered with numerous bony tubercles, the ventral fins modified into a sucker, by means of which it adheres with great force to any substance to which it applies itself. Before the spawning season it is of a brilliant crimson color, mingled with orange, purple, and blue, but afterward changes to a dull blue or lead color. It sometimes weighs seven pounds, and its flesh is very fine at some seasons, though insipid at others. It frequents the N. seas, and is also called cock paddle, lump sucker, and sea owl.

LUNA, the Latin name for the moon, among the Greeks Selēnē. Her worship is said to have been introduced among the Romans in the time of Romulus.

LUNAR TABLES, in astronomy, ponderous volumes of solid figures which are the numerical development and tabulation of some analytical theory of the moon's motions and perturbations. From these are constructed the annual ephemerides of the moon's hourly position, one of the principal features of a nautical almanac. Hansen's "Tables de la Lune" ("Lunar Tables") are the ones from which the principal ephemerides are constructed to-day.

LUNAR THEORY, in astronomy, the deduction of the moon's motion from the law of gravitation.

LUNATIC ASYLUM. See INSANITY.

LUND (lönd), a city of Gothland, in the extreme S. of Sweden, 374 miles S. W. of Stockholm and 10 N. E. of Malmö. The principal building is the fine Romanesque cathedral, dating from the 11th century, with an imposing crypt. Lund owes its revival to the founding of a university in 1668 by Charles XI. It was attended in 1911 by 1,405 students, and has a library of 120,000 volumes and 3,000 MSS., an excellent zoölogical museum, and a botanic garden. Tegnér was a professor from 1813 to 1826, and here he composed his masterpiece "Frithjof." In the 10th century Lund was a large and powerful city, was made a bishopric in 1048, and an archbishopric in 1104. The archbishop claimed ecclesiastical supremacy over the whole of Scandinavia. At the same period Lund was the chief seat of the Danish power in the Scandinavian peninsula, and for a long period the capital of the Danish kingdom; at the epoch of its greatest prosperity it is said to have had 200,000 inhabitants. But after the introduction of the Reformation by Christian III. in 1536, the city began to decline, and had sunk down to a mere village before the end of the 17th century. Pop. about 20,000.

LUNDA, a Bantu tribe living in British Central Africa. They till the land and trade in ivory and slaves. As a whole they are among the superior African tribes.

LUNDY, a granitic island of Devonshire, England, in the mouth of the Bristol Channel, 11¾ miles N. N. W. of Hartland Point; length 3½ miles, breadth 1 mile; has rocky and precipitous shores, with only one landing-place on the S. side; and an altitude of 525 feet; near the S. end is a lighthouse, built in 1820. The cliffs are the resort of multitudes of sea-fowl. The antiquities include prehistoric kists, remains of round towers and a chapel, and the ruined castle of the Mariscoes (11th to 14th centuries), from whose time on into the 17th century Lundy was a stronghold successively of pirates, buccaneers, privateers, and smugglers. It figures in Kingsley's "Westward Ho!"; was the death-place of "Judas" Stukely; garrisoned till 1647 for Charles I.; and in 1834 purchased for $49,350 by the Heaven family.

LUNDY'S LANE, a locality in the Province of Ontario, near the Falls of Niagara. Here, July 25, 1814, an obstinate and undecisive engagement was fought between an American force, numbering 3,000 men, under General Brown, and a body of about 4,000 British troops commanded by General Drummond. The loss of the Americans was 743 men; that of the British 878 men. In this battle, fought against the best disciplined English soldiers, the troops of Brown fought with a valor which did much to disabuse the country of the idea, then prevalent, that American troops could not cope with the trained veterans of Europe.

LUNE, in geometry, the area included between the arcs of two circles which intersect each other. The Lunes of Hippocrates, the name given to the two semicircular figures, remarkable for their employment by Hippocrates in his celebrated theorem. See CURVE.

LÜNEBURG, Germany, a town in the Province of Hanover, 30 miles S. E. of Hamburg. It is noted for its mineral springs and baths, but is also important for its manufactories of chemicals, iron wares, carpets, cement, etc. Pop. about 30,000.

LUNENBURG, a S. E. county of Nova Scotia, bordering on the Atlantic Ocean; area about 600 square miles; rivers, Le Have river, and numerous smaller streams; surface, broken; soil in some parts fertile; the coast is deeply indented with bays and inlets, of which Margaret's Bay and Mahone Bay are the largest. Capital Lunenburg; sometimes called Malaguash. Pop. about 35,000.

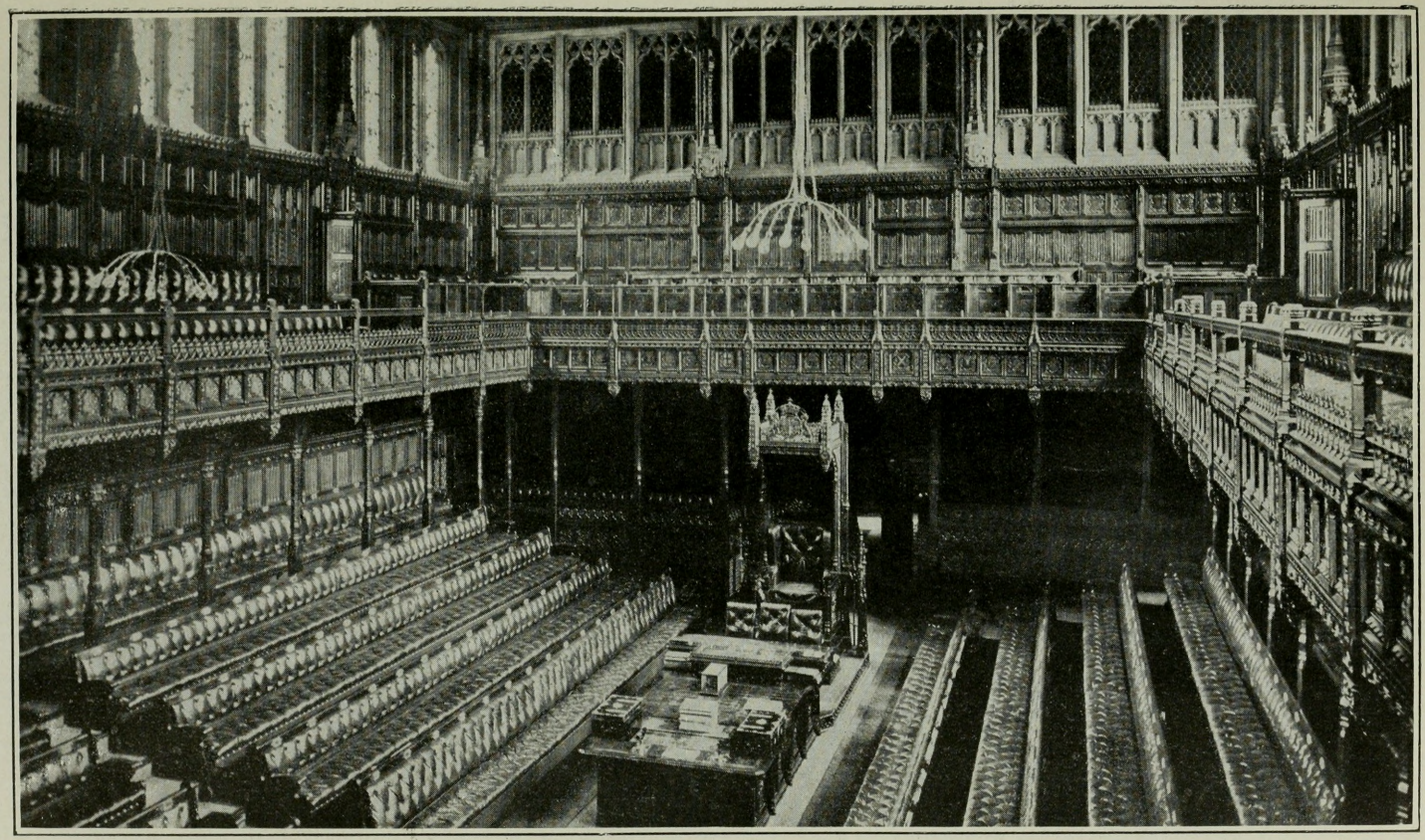
LUNETTE, a term applied to various objects of a half-moon shape; as: Archæology, a crescent-shaped penannular concave plate of metal, apparently worn as an ornament about the neck. Architecture: (1) An arched aperture in the side of a long vault, and having a less height than the pitch. (2) A semicircular aperture in a concave ceiling. (3) An opening in the roof of a house. Farriery, a horseshoe having only the front, curved portion, lacking the branches. Fortification, a half-moon; a detached work presenting a salient angle to ward the enemy, and flanks open at the gorge. Optics: A perifocal spectacle-glass; concavo-convex, its curve approximating the shape of the eye and affording more distinct oblique vision. Ordnance, a forked iron plate into which the stock of a field-gun carriage is inserted.

LUNÉVILLE (lü-nā-vēl'), a town in the French department of Meurthe-et-Moselle, at the confluence of the Meurthe and the Vezouse, and 20 miles S. E. of Nancy; manufactures gloves, hosiery, cottons, etc. It was formerly a residence of the Dukes of Lorraine; their palace, built by Duke Leopold, and in which the Emperor Francis I. was born, is now used as a cavalry barrack, this town being one of the largest cavalry stations in France. Here was signed the peace of Lunéville, Feb. 9, 1801, between Germany and France, on the basis of the peace of Campo-Formio. The German army, in its sweep toward Paris in 1914, occupied Lunéville, but was forced to evacuate it on being pressed back after the Battle of the Marne. Pop. about 25,000.

LUNG, an organ of respiration.

Human Anatomy.—The organs of respiration are on each side of the chest, conical, and separated from each other by the heart in front and a membranous partition, the mediastinum. Externally they are convex, to correspond with the chest walls, and internally concave to receive the heart; above they terminate in a tapering cone and below in a broad concavity resting on the diaphragm. In color they are mottled, pinkish-gray, speckled with black. Each is divided into two lobes, separated by a deep fissure, and the right lung has a third lobe above of triangular shape; the right is also larger on account of the heart lying toward the left side. The lungs are kept in position by their roots, composed of the bronchi, pulmonary artery, and pulmonary veins; the right side presents the bronchus above, then the artery, then the veins; but on the left side we find the bronchus between the artery and the veins. Each lung is inclosed in a serous membrane, the pleura, which extends to its root, and is then expanded on the chest wall. The lungs are composed of minute ramifications of the bronchial tubes, terminating in intercellular passages and quadrilateral or hexagonal air-cells, along with ramifications of the pulmonary artery and veins, bronchial arteries and veins, lymphatics and nerves, the whole bound together by areolo-fibrous tissue constituting the parenchyma of the lungs. See PHYSIOLOGY: RESPIRATION.

Comparative Anatomy.—In the lowest and simplest forms of animal life (aquatic), we find no trace of respiratory organs, the interchange between the layer of water with the aerating surface being effected by the general movement of the body, or by cilia. In most of the Mollusca we find gills in the place of lungs, except in the terrestrial species, as the snail or slug, where we



THE HOUSE OF COMMONS, PARLIAMENT BUILDING, LONDON

Enc. Vol. 6—p. 36



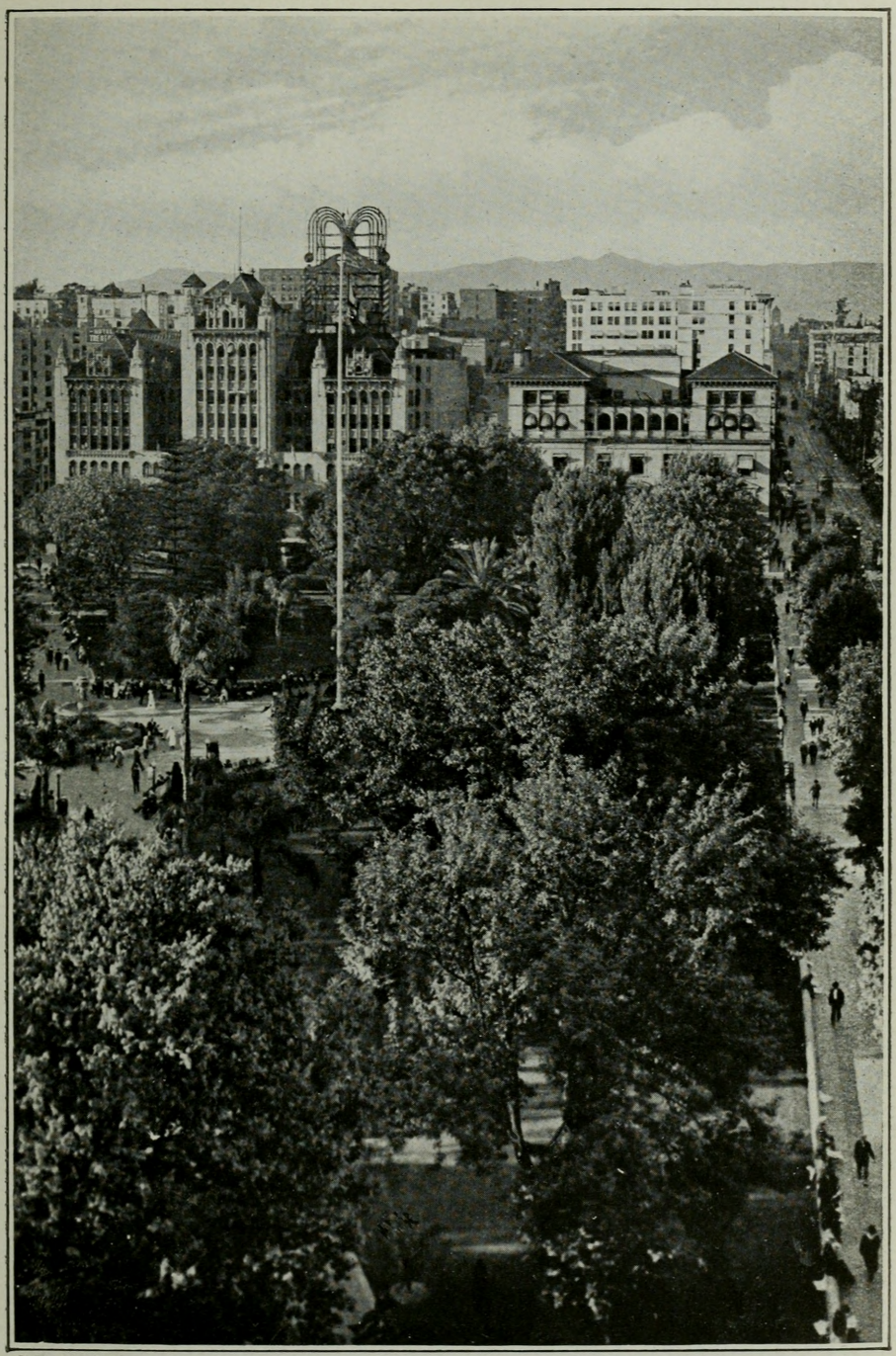
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A LONDON DEVICE FOR GIVING INFORMATION ABOUT TRANSIT



Photo, Colonial Press Service

A LONDON FOG. THE PHOTOGRAPH WAS MADE AT 2 P. M.



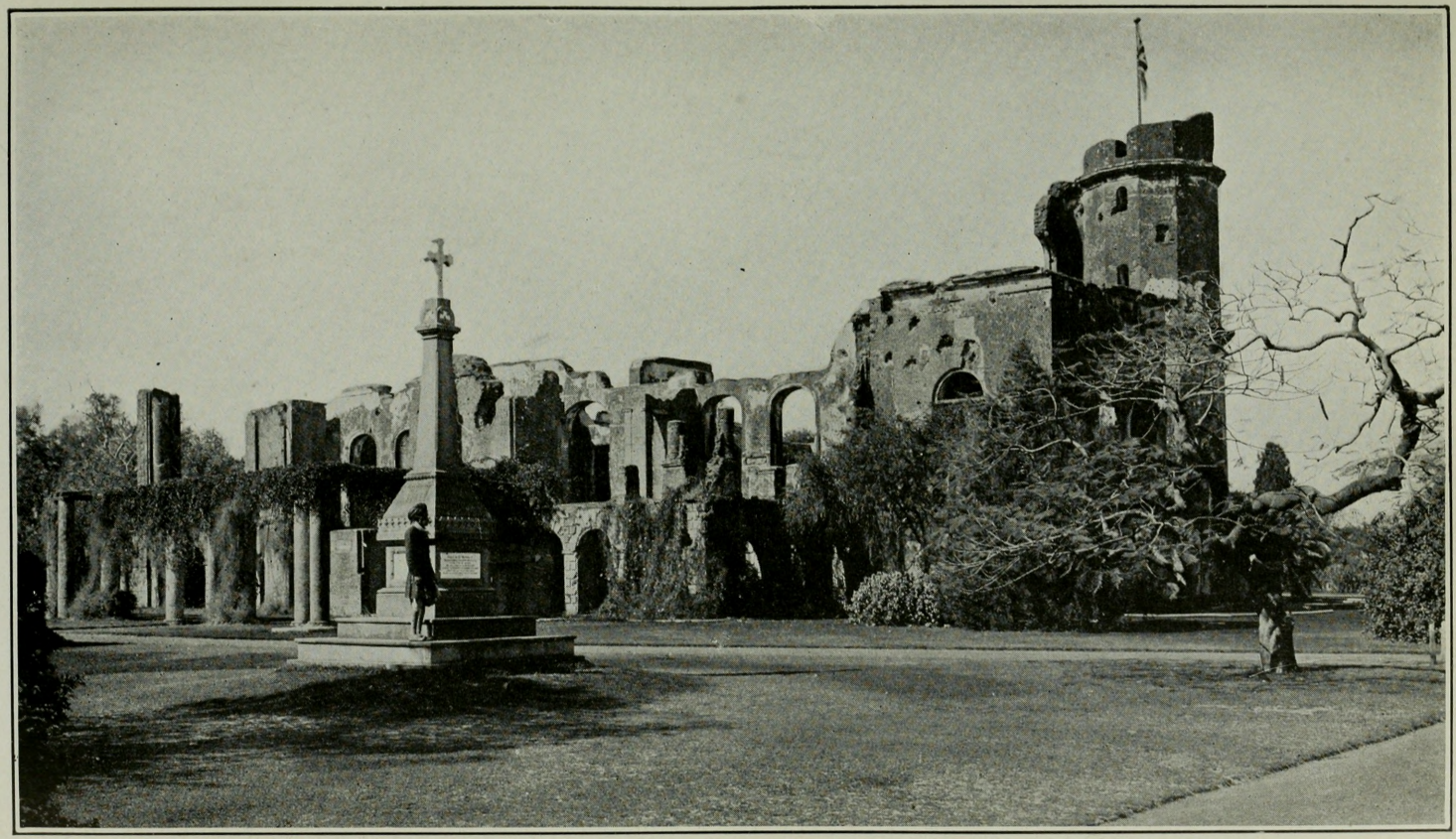
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A VIEW ACROSS CENTRAL PARK, LOS ANGELES, CAL.



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LUCERNE AND THE RIGI, SWITZERLAND

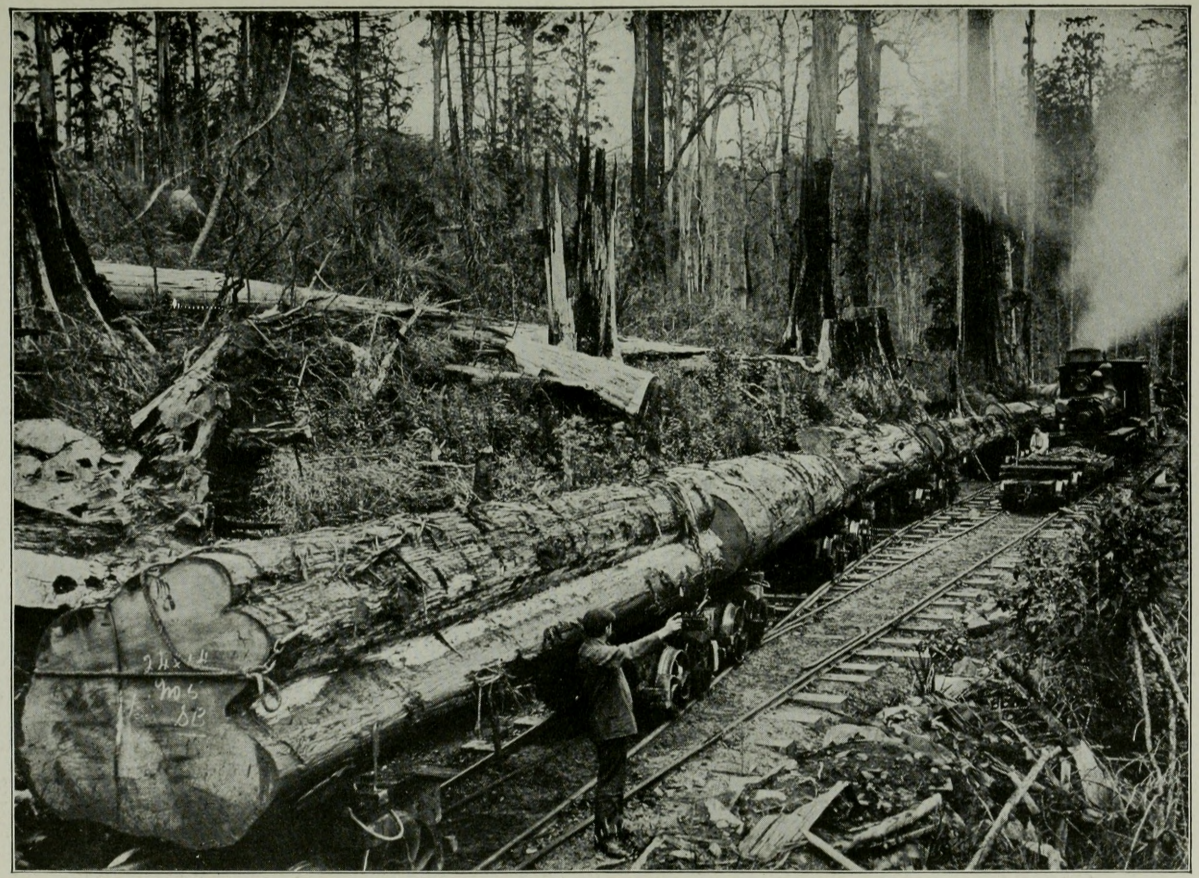


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RUINS OF THE RESIDENCY AT LUCKNOW, INDIA, AND THE MONUMENT IN MEMORY OF THE SIEGE

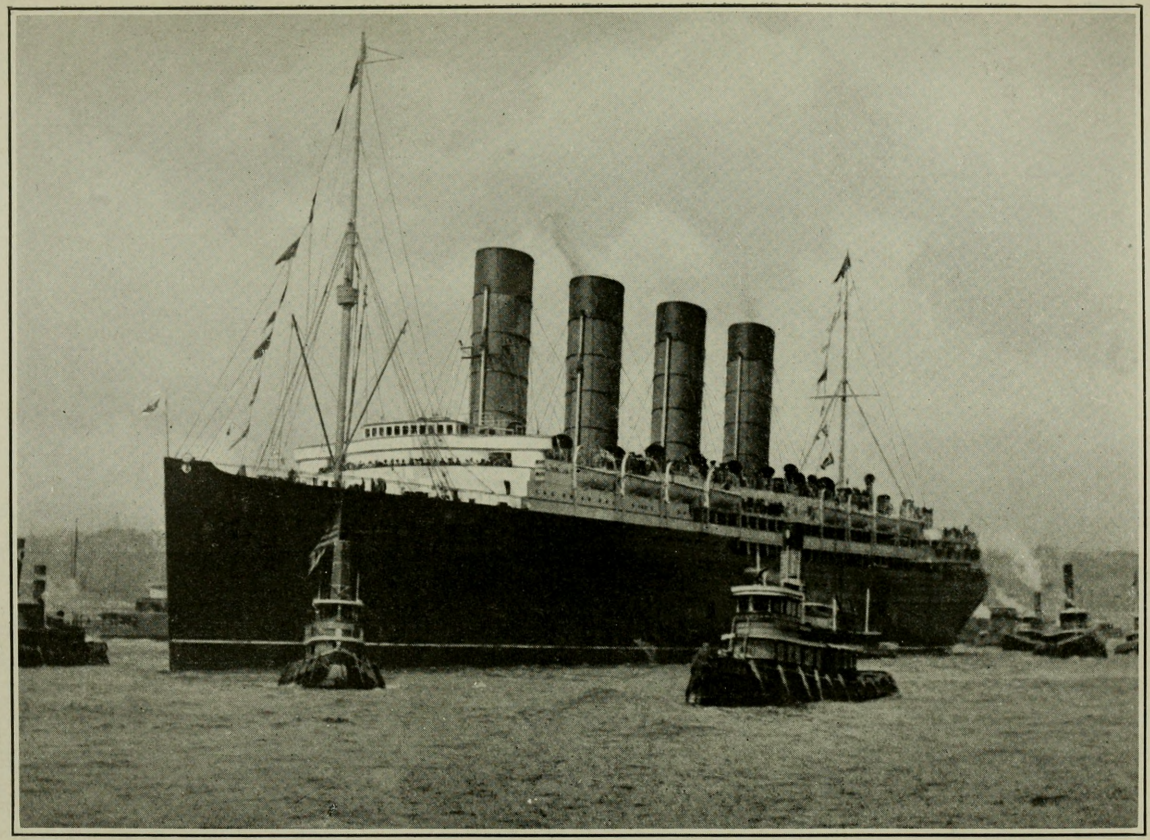


LOGS IN THE MADAWASKA RIVER, LUMBER INDUSTRY OF NEW BRUNSWICK, CANADA



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A LOG TRAIN IN THE ISLAND OF TASMANIA, WHERE LUMBERING IS AN IMPORTANT INDUSTRY



© *International Film Service*

THE "LUSITANIA" LEAVING HER PIER IN NEW YORK. THE "LUSITANIA" WAS TORPEDOED MAY 7, 1915

have a lung which is a simple cavity in the back communicating directly with the air, and covered with minute blood-vessels; in bivalve mollusks again, as in the oyster, it is the internal surface of the mantle or skin-lining which is the special organ, with the same essential structure as gills. In the Articulata, as tapeworm, marine worms, Crustacea, as the crab tribe, we find a somewhat similar arrangement to that of the Mollusca, but in insects, and other proper air-breathing Articulata, we have a regular series of air-sacs along each side of the body, opening by pores, called spiracles or stigmata, so in the spider-tribe, but in a more concentrated form, and more resembling the lung of the Vertebrata. The gills of fishes come next in the scale, accompanied in many cases with an air bladder, especially in those approaching the Reptilia in their organization, and in some of these it is a double sac, the analogue of the double lung. The lungs of the reptiles are, for the most part, capacious sacs occupying a good deal of the trunk cavity, but not filled, like those of the Mammalia, by an act of inspiration, but chiefly by the process of swallowing. In birds we have the connecting link between the types of structure in the two classes.

Pathology.—There are various diseases of the lungs; two of the most important are tubercular phthisis and pneumonia.

LUNGCHOW, a city of China, in the province of Kwangsi, China, a short distance from the border of Tongking. It is an important military station. Pop. 13,000.

LUPINE, a very extensive genus of hardy annual, perennial, and half-shrubby plants, some of which are cultivated in gardens for the sake of their gaily-colored flowers. They belong to the natural order *Leguminosæ*.

LUPUS, in zoölogy: (1) a genus established by Buffon, to include the true wolves and the jackals, now generally considered as forming part of the genus *Canis*. (2) The first section of Hamilton Smith's subgenus *Chaon*. In this nomenclature *Lupus vulgaris* is the common wolf, *L. lycaon* the black wolf, *L. nubilus* the dusky wolf, and *L. mexicanus* the Mexican wolf. In pathology: A spreading tuberculous inflammation of the skin, generally of the face, tending to great destructive ulceration, often from syphilis. There are two forms, chronic lupus and *lupus exedens*, the latter characterized by the rapid eating away of the parts affected. In astronomy: The Wolf; one of the 15 ancient southern constellations. It is situated between Centaurus and Ara, just under Scorpio. It contains no stars larger than the third magnitude.

LURAY CAVERN, a cave, not large, but remarkable for the vast number and extraordinary shapes of its stalactites, close to Luray village, Va., 90 miles N. W. of Richmond. Many of these wonderful columns exceed 50 feet in length; numbers of them are hollow, giving out bell-like notes when struck; and the colors range from waxy white to yellow, brown, or rosy red. The cavern, which is lit with electric light, attracts thousands of visitors every year.

LURISTAN (lö-ris-tän'), a mountainous province in the W. of Persia; area 15,600 square miles; pop. about 300,000. It corresponds roughly to the ancient Susiana, was the seat of the ancient Elamite empire, and is now occupied by numerous minor tribes.

LUSHWANKAN. See PORT ARTHUR.

LUSITANIA, a British steamship of the Cunard line, 32,000 tons, built on the Clyde in 1908. From 1908 to 1915 she was in the transatlantic service between New York and Liverpool, in which service she made the record time of five days. When the World War broke out in 1914 the "Lusitania" carried in addition to passengers large cargoes for the British Government. On May 1, 1915, she sailed from New York for Liverpool, in spite of the warnings of the German Government, printed in the New York newspapers, that British vessels sailing in the "war zone," viz., the waters surrounding the British Isles, were liable to be sunk without warning. When the steamship was ten miles off the coast of Old Head of Kinsale, Ireland, on May 7, 1915, a torpedo fired by a German submarine struck the vessel and about twenty minutes later she sank with all on board. Eleven hundred and fifty individuals, including many women and children, lost their lives, among which were over a hundred American citizens. The ship and cargo were valued at eleven million dollars. The vessel was not armed and received no warning from the submarine, nor did the German commander attempt to aid in the rescue of the passengers and crew.

President Wilson of the United States on May 13 addressed a note to the German Government demanding a disavowal of the act of the German commander, reparation for the injuries, and a promise to avoid such acts in the future. He further stated that the German Government must not expect the United States

"to omit any word or act necessary to the performance of its sacred duty of maintaining the rights of the United States and its citizens." In response the German Government evaded the issue by expressing regret for the loss of American lives, but claiming that the "Lusitania" was armed and was a British auxiliary cruiser carrying munitions of war.

The question as to what action should now be taken by the American Government brought out a decided difference of opinion between President Wilson and his Secretary of State, William J. Bryan, which ended in the latter's resignation on June 8, because he could not agree in the strong measure contemplated by President Wilson to protect American lives. The second note of the President to Germany, while still insisting that the act of the German commander was a grievous wrong to the United States, was very pacific in its tone and indicated that the question would be made a subject for negotiation and not a cause of war. After further exchange of notes the German Government on Sept. 1, 1915, finally promised not to sink merchant ships without warning and agreed to provide for the safety of the passengers and crew whenever such ships were sunk. See WORLD WAR.

LUSSIN, or **LOSSINI**, an island in the Adriatic Sea, formerly belonging to Austria, but since the World War in the possession of Italy. Area, 29 square miles. Pop. 15,000.

LUTE, an instrument of the guitar family. It has five to six pairs of strings, each pair tuned in unisons or octaves. The several frets of the lute are distinguished by the letters of the alphabet. The lute consists of four parts: The table; the body, which has 9 or 10 sides; the neck, which has as many stops or divisions; and the head or cross, in which the screws for tuning it are inserted. The performer strikes the string with the fingers of the right hand, and regulates the sounds with those of the left. Simply constructed, it is called the French lute. With two necks—one for the bass notes—it is called a theorbo.

LUTETIA (lū-tē'shi-ä), a name by which the city of Paris was often anciently referred to: the word means "mud hovels." The Romans named the collection of huts they found here *Lutetia Parisiorum*, "the mud-town of the Parisii"; the first name being dropped left the present title, Paris. Also Asteroid 21, discovered by Goldschmidt at Paris, Nov. 15, 1852.

LUTHERANS, a designation originally applied by their adversaries to the Reformers of the 16th century, and afterward distinctively appropriated among Protestants themselves to those who took part with Martin Luther against the Swiss Reformers, particularly in the controversies regarding the Lord's Supper. It is so employed to this day as the designation of one of the two great sections into which the Protestant Church was soon unhappily divided, the other being known as the REFORMED CHURCH (*q. v.*). To the end of Luther's life perfect harmony subsisted between him and his friend Melanchthon; but already there were some who stood forth as more Lutheran than Luther, and by whom Melanchthon was denounced as a "crypto-Calvinist" and a traitor to evangelical truth. After Luther's death this party became more confident, and, holding by Luther's words, without having imbibed his spirit, changed his evangelical doctrine into a dry scholasticism and lifeless orthodoxy, while extreme heat and violence against their opponents were substituted in the pulpit itself for the zealous preaching of the Gospel. The principal seat of their strength was in the University of Jena, which was founded in 1557 for this very object, and maintained their cause against Wittenberg. Great intolerance was manifested by this party; and no controversy was ever conducted with more bitterness and ill-feeling than the Sacramentarian Controversy.

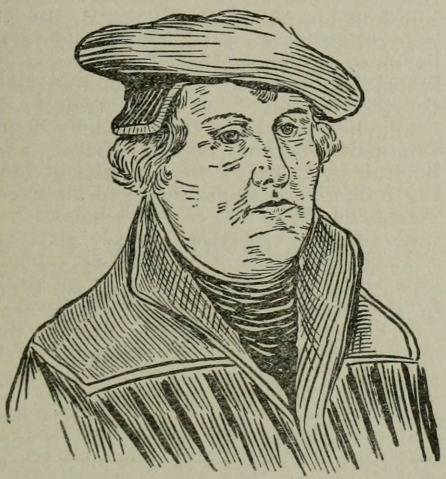
Lutheranism is the prevailing form of Protestantism in Germany; it is the national religion of Denmark, Sweden, and Norway; and there are Lutheran Churches in the Baltic provinces of Russia, in Holland, France, Poland, and the United States. In all there are about 30,000,000 Lutherans.

In its constitution the Lutheran Church is generally unepiscopal, without being properly presbyterian. It is consistorial, with the civil authorities so far in place of bishops.

In Denmark, Sweden, and Norway there are bishops, and in Sweden an archbishop (of Upsala), but their powers are very limited.

There were in the United States and Canada in 1919 3,652,010 baptized members and 2,451,997 confirmed members, with 9,829 ministers and 15,638 congregations. The Canadian membership was 64,490, with 237 ministers and 827 congregations. The denomination maintained missions, both domestic and foreign. Contributions for domestic missionary work in 1918 amounted to $6,383,103.

LUTHER, MARTIN, the leader of the German Reformation; born in Eisleben, Lower Saxony, Nov. 10, 1483. His father, Hans Luther, was a poor miner, and soon after his son Martin's birth settled with his pious and industrious wife, Margaret, at Mansfeld. At the age of 14 he was sent to the school of Magdeburg, from which he removed to Eisenach, and thence to the University of Erfurt, where, in 1503, he received his first degree, and, two years later, having obtained the degree of doctor of philosophy, he delivered lectures on the



MARTIN LUTHER

physics and ethics of Aristotle. He entered the monastery of the Augustines in 1505. During his residence in the monastery he studied with great enthusiasm the writings of St. Augustine, and passed through severe mental conflicts, seeking vainly guidance or consolation. In 1507 he was ordained priest, and in 1508 he was made Professor of Philosophy in the new University of Wittenberg. In this sphere of action his powerful mind soon showed itself; he threw off the fetters of the scholastic philosophy, asserted the rights of reason, and attracted a large number of disciples. He was called by the Senate to preach, and it was with very great reluctance and timidity that he made his first attempts in the pulpit. In 1510 he visited the court of Pope Julius II. at Rome. After his return, in 1512, he was made doctor in theology. His profound learning, his intimate acquaintance with the Bible, together with the fame of his eloquence, soon made Luther known to the principal scholars, and esteemed as a powerful agent for the reformation of the Church. Great, therefore, was the attention excited by his 95 Propositions, affixed to the Castle Church, Wittenberg, Oct. 31, 1517, and intended to put an end to the sale of indulgences by the Dominican Tetzel. They were condemned as heretical and burnt; but neither menaces nor persuasions could induce him to recant, and he maintained the invalidity of indulgences and denied the papal supremacy. In 1518 Luther had a controversy with Doctor Eck, and the same year met the Cardinal-legate Cajetan at Augsburg. In 1520 the Pope issued a bull of excommunication, which Luther publicly burnt before an immense assembly at Wittenberg. Luther's separation from Rome was now complete. Leo X. urged the new emperor, Charles V., to apprehend and punish the turbulent and daring heretic, but by the influence of the Elector of Saxony the reformer's cause was tried at Worms. On April 16 he reached that city, attired in his friar's cowl; multitudes met him, and he entered it attended by 2,000 persons. Before his 204 august judges, the emperor and his nobility, his courage did not fail, and he steadily appealed to the authority of Scripture. The result was that Charles issued a rescript "against the evil fiend in human form," "the fool," and "the blasphemer," and put him under the ban of the empire. On his return from Worms, he was seized, at the instigation of his friend the Elector of Saxony, and safely lodged in the old castle of the Wartburg. For a whole year he remained in this shelter, while his friends and relatives mourned over his absence or death. But his powerful patrons had in this way provided for his safety. During this time he translated the New Testament into German, which was published in 1522.

Leaving his Patmos, and returning to Wittenberg, his undaunted energy carried all before it, the Reformation was ushered in, and in 1524 Luther abandoned the monastic dress—the last symbol of his connection with Rome. He crushed his fanatical opponents in the party of the Reformists, gallantly entered the lists with Henry VIII. of England, and fought stoutly with Erasmus on the Freedom of the Will. In 1525 Luther married Catharine von Bora, a nun who had escaped from a convent; on which his enemies accused him of immorality and impiety; but Luther defended his act on Scriptural ground. In 1529 the emperor convened a diet at Speyer, to procure aid from the German princes against the Turks, and to devise means for allaying religious disputes. In this assembly it was ordered that the mass should be

universally observed throughout the empire. Against this decree the electors of Saxony and Brandenburg, and other princes, entered their protest; on which account the reformed party acquired the name "Protestants." These princes then entered into a league for their mutual defense against the emperor. In 1530 was drawn up by Melanchthon the Confession of Augsburg, which was received as the standard of the Protestant faith in Germany. In 1535 Luther's translation of the Bible into German was published. In 1537 Luther was attacked with a dangerous illness, but recovered, and went on writing books and laboring to promote the great work of reformation. He was a multifarious and voluminous writer; a complete edition of his works, in 26 volumes, was published at Erlangen, in 1833. A translation of Luther's "Table-Talk" was published in London, in 1849. He died in Eisleben, Feb. 18, 1546.

LUTHER LEAGUE OF AMERICA, THE. A union of the young people of the Lutheran churches, founded at Pittsburgh, Pa., in 1895. Its creed is that of the Lutheran church, viz. the Augsburg Confession, and it will receive any society that subscribes to that basis. It holds its conventions every other year and has an executive committee and corresponding secretary. It publishes "The Luther League Review" monthly in New York. The Luther League has a membership in the United States of about 50,000 and is organized in 19 States. The Luther Leagues of Canada and Porto Rico are members of the League in the United States.

LUTON, a market-town of Bedfordshire, England, on the little Lea, among the Chiltern Hills, 31 miles N. N. W. of London; is the chief seat in England of the straw-plait (for hats, bonnets, etc.), an industry dating from the reign of James I., and employing 20,000 persons here and in the neighborhood; has St. Mary's Church, Plait-hall (1869), a town-hall, corn exchange, people's park, etc. Pop. about 45,000.

LÜTZEN (lüt'sen), a small town in the Prussian province of Saxony, famous for two great battles fought in its vicinity. The first a brilliant victory of the Swedes in the Thirty Years' War, took place Nov. 6, 1632. The battle on May 2, 1813, was fought somewhat farther to the S., at the village of Grossgörschen. It was the first great conflict of the united Russian and Prussian army with the army of Napoleon in that decisive campaign; and the French were left in possession of the field.

LUTZK, Russia, a strongly fortified town on the Styr river, fifty miles W. of Rovno and 120 miles S. W. of Lublin. This fortress, together with Dubno and Rovno, formed a very powerful triangle of permanent fortifications erected by Russia in recent years. Lutzk was taken by the Germans on Aug. 30, 1915, after only three days of fighting, the stronghold having been previously abandoned by the Russians for strategic reasons. Twenty-three days later it was recaptured by the Russians. Four days later the Russians were again forced to withdraw. On June 8 it was again taken by the Russians, under General Brusiloff, during his famous Galician drive, together with over 11,000 prisoners and much war material. Henceforth the fortress remained in Russian hands until the termination of hostilities on the eastern front. The town is the center of an agricultural grain-raising region, with a population, before the war, of about 32,000.

LUXBURG, COUNT KARL, German Chargé d'Affaires at Buenos Aires, Argentina in 1917, during the Great War. In the summer of that year, he sent secret dispatches to Berlin through the Swedish legation via Stockholm, which were made public by Secretary Lansing of the United States Department of State. These dispatches urged that certain Argentine ships should be "spurlos versenkt"—destroyed without a trace. The publication of the documents resulted in the dismissal of Count Luxburg from Argentina, and the virtual entrance of Argentina into the war. Luxburg was also Minister to Uruguay, and on his dismissal from Argentina, he asked for a passport to Montevideo instead of to Berlin.

LUXEMBOURG PALACE (Paris), famous for its architecture, art galleries, and gardens. The building was begun in 1616 and completed in 1620 by Salomon de Brosse for Marie de Medici. In 1835-41 the main body of the structure was doubled in size and a magnificent hall was built for the House of Peers, later occupied by the Prefecture of the Seine and since by the Senate. Always a royal or public picture gallery, the paintings are mostly by French artists, American painters being next. The main structure fronts on a Court of Honor measuring 300 by 360 feet inclosed on sides and front by low wings. The gardens, among the most noted in France, are the only Renaissance gardens in Paris. Originally laid out by De Brosse, they were nearly stripped in the Revolution, but restored in 1801.

LUXEMBURG, formerly a duchy, bounded on the N. by the Belgian province of Liége, on the W. by that of Namur, on the E. by Rhenish Prussia and on the S. by France; area, 2,700 square miles. A chain of hills, branching from the Ardennes, traverses the country from S. W. to N. E., forming the dividing line between the basins of the Meuse and the Moselle. The valleys are fertile, but the rest of the country has mostly a stony and barren soil; and in some parts a good deal of the surface is occupied with marshes, heaths, and poor waste land. The chief branch of rural industry is the rearing of cattle for exportation. Horses are good. There are few countries where iron is more abundant. The inhabitants, generally of Saxon origin, are all Roman Catholics. Luxemburg was ceded to Siegfried by the monastery of Trèves, and created a county in 965. In the 12th century it came into the possession of the Counts of Limburg, who took the title of Counts of Luxemburg. The emperor Charles IV. erected it into a duchy in 1354. It came to Philip of Burgundy by his marriage with Isabella, daughter to the King of Portugal, in 1443, and through him passed to the house of Spain, with whom it remained till the peace of the Pyrenees, when part of it was ceded to France, Nov. 7, 1659. It was ceded to France by the treaty of Campo-Formio, Oct. 17, 1797, and it passed to Holland in exchange for certain German principalities in 1814, and became a grand-duchy. In consequence of the Belgian revolution, Luxemburg was dismembered, and a portion was assigned to Belgium by the conference of London, in October, 1831, and a fresh division was made in 1839, that part assigned to Belgium being now known as the Province of Luxemburg, the rest forming the present Grand-duchy, the King of Holland retaining the title of Grand Duke of Luxemburg. The Grand Duchess Marie Adelaide succeeded her father Grand Duke Wilhelm in February, 1912, and, in turn, was succeeded by her sister, Princess Charlotte, Jan. 15, 1919. The neutrality of the Duchy was violated in August, 1914, by the German armies.

By the terms of the Peace Treaty of May 7, 1919, Germany renounced her treaties and conventions, railroad rights, released the Duchy from the Zollverein from Jan. 1, 1919, adhered to abrogation of neutrality and accepted international agreement of Allied powers. The Grand-duchy is divided into the district of Luxemburg (identical with the Dutch province) and the districts of Diekirch and Grevenmacher. The Belgian province is governed like other provinces. Area of the Grand-duchy 998 square miles. Pop. about 260,000.

LUXEMBURG, the capital of the above grand-duchy, formerly included in Dutch Luxemburg, on the Alzette, a tributary of the Sur, 22 miles S. W. of Trèves. Once one of the strongest fortresses in Europe. After 1815 the city was garrisoned by about 3,000 Prussian troops, but on the protestation of France, and by a clause of the treaty of London, May 11, 1867, the grand-duchy was rendered neutral, and it was agreed that the town of Luxemburg shall cease to be a fortified place. The fortress was evacuated the following month by the Prussians, and the works razed in the course of the year. During the World War, the city was in German occupation, as a military depot, officers' headquarters. Pop. about 20,000.

LUXOR, a village in Egypt on the banks of the Nile, standing now on the site of the ancient city of Thebes. The great court erected by Rameses II. is perhaps the greatest building in this section of Egypt.

LUZERN. See LUCERNE.

LUZERNE, a town in Luzerne co., Pennsylvania, near the Susquehanna river, a little north of Wilkes-Barre. It is near the center of the coal region, and in addition to coal mines possesses a foundry, drill factories, etc. Pop. (1910) 5,426; (1920) 5,998.

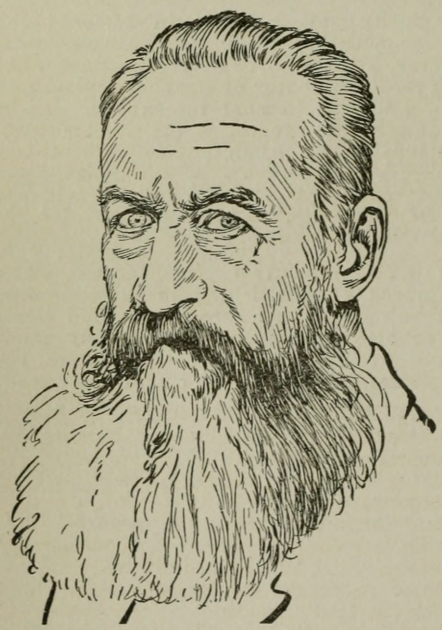
LUZON, the pricipal and most northerly island of the Philippine group; between the Chinese Sea and the Pacific Ocean; area, 40,969 square miles; pop. (1903) 3,798,507; capital, Manila. The surface of the island is mountainous, showing volcanic formations, and there are also vast tracts of swampy land. There are also indications of mineral resources, including gold, coal, copper, lead, iron, sulphur, marble and kaolin. Luzon yields crops of rice and corn, in quantity usually inadequate for home consumption. The best quality and largest amount of tobacco is grown on Luzon, and in the S. portion of the island hemp and cocoanut are cultivated extensively. There is a large internal commerce between Manila and the different islands in the group, carried on almost exclusively by water. At the time of the cession of the islands to the United States there was but a single line of railway, extending from Manila N. to Dagupan. The roads in the immediate vicinity of Manila are macadamized and generally in good condition; elsewhere they are of dirt, and become almost impassable in the rainy

season. The different provinces of the island are connected with Manila by telegraph, and there are cables from that city to the S. islands in the group, and also to Borneo, Singapore, and Hong Kong. See PHILIPPINE ISLANDS and MANILA.

LUZULA (lö'-), wood-rush; a genus of *Juncaceæ* (rushes). It has soft, plane, generally hairy leaves, a glumaceous perianth of six leaves, and a one-celled, three-valved capsule with three seeds. About 40 are known, all from temperate or cold climates.

LUZZATTI, LUIGI, Italian statesman, born in 1841, in Venice, of Jewish parents. In 1867 he became professor of political economy and constitutional law at Padua University. In 1870 he entered politics by being elected to the Chamber of Deputies, after which he soon rose to prominence. He was Minister of Finance 1891-1892 and 1896-1898, and for a short period in 1910 he was Premier. He is an extreme Liberal, almost a radical, in his politics and is noted for his interest in all working-class movements.

LVOFF, PRINCE GEORGE E., Russian social reformer, one of the prominent figures in the final revolution



PRINCE GEORGE E. LVOFF

which brought about the downfall of the Imperial Government in 1917; became interested in social reform at an early age, working through the zemstvos, those community councils within which the Imperial Government limited all the local autonomy it allowed to communities. Prince Lvoff was one of the delegation which, representing the national federation of zemstvos, presented a petition to Nicholas II., in 1905, for an extension of civic rights. He was a member of the first Duma, and identified himself with the Constitutional Democrats, standing for an extension of the democratic principle in Russia's political organization. In March, 1917, when the Czar was overthrown and the problem of organizing a provisional government presented itself, Prince Lvoff was found to be the only personality on whom both conservatives and radicals could agree as suitable to head the Cabinet. He was, accordingly, nominated Premier, and was one of the few who remained in the Cabinet during the many changes of the Kerensky régime. After the rise into power of the Bolsheviki, under Lenine and Trotzky, Prince Lvoff was compelled to flee abroad.

LWOW. See LEMBERG.

LYAUTEY, LOUIS HUBERT GONZALVE, a French soldier; born at Nancy, French Lorraine, in 1854. Member of the French Academy. After a military training he engaged in French colonial service. A pupil of Galleni, Lyautey at Madagascar and Tonking accomplished important work in strengthening the French position in the colonies and pacifying the natives. In 1912 he was appointed Resident-General at Fez, Morocco, at a time when lawlessness reigned unchecked and the Germans were active in fomenting trouble among the Berbers and Arabs. General Lyautey set up advance posts among the malcontents which were influential in civilizing the people. He built up the country by establishing important public works. He trained the Moors to be effective soldiers, sending two army corps to the western front in the European War, where the Moroccans proved their valor. General Lyautey was appointed Minister of War in 1916, but resigned in 1917.

LYCAONIA (lik-ā-ō'ni-ä), in ancient geography, a country in Asia Minor, bounded on the E. by Cappadocia, on the N. by Galatia, on the W. by Pisidia, and on the S. by Isauria and Cilicia; its capital was Iconium.

LYCEUM (-sē'-), the name of an academy at Athens, so called from its position near the temple of Apollo Lyceus. Here Aristotle and his disciples taught, and were called Peripatetics, from their habit of walking up and down its porches while delivering their lec-

tures. In the present day, in France, the name (*lycée*) is given to preparatory schools for the universities, as in them the Aristotelian philosophy was formerly taught.

LYCIA (lish'i-ä), in ancient geography, a country on the S. coast of Asia Minor, extending toward Mount Taurus, and bounded on the W. by Caria, on the N. by Phrygia and Pisidia, and on the E. by Pamphylia. The most ancient inhabitants are said to have been two Semitic races called the Solymi and Termilæ, the former of whom were driven from the coast to the mountains in the N. by adventurers from Crete, under the command of Sarpedon, a brother of Minos, who first gave the country the name of Lycia. Lycia became subject to the Persian and Syrian monarchies, and then to Rome. During the time of its independence it consisted of 23 confederate cities. Many monuments and ruined buildings, exquisite sculptures, coins, and other antiquities, testify to the attainments of the Lycians in civilization and the arts.

LYCK, Germany, a town in East Prussia, 100 miles S. E. of Königsberg. It is an industrial center of considerable importance, machinery, cement goods, and furniture being manufactured chiefly. It was the scene of much fighting during the war, the Russians capturing it in 1914 and holding it for some weeks. Pop. about 15,000.

LYCURGUS (lī-kur'gus), the lawgiver of Sparta; usually dated about 820 B. C. He was uncle of the young King Charilaos, and governed the states wisely during his nephew's infancy, then traveled over Crete, Ionia, and Egypt, and on his return, finding his country in complete anarchy, made a new division of property, and remodelled the whole constitution, military and civil. Next he bound the citizens by oath not to change his laws till he came back, and then left Sparta to be no more seen. His memory was honored as that of a god with a temple and yearly sacrifices.

LYDDITE, an explosive, which derives its name from the town of Lydd, Kent, England, where it is manufactured. It consists of fused picric acid ($C_6H_2(NO_2)_3OH$). For use in warfare, it is melted at a carefully regulated temperature of 130-140° C., and poured directly into shells, a space being left in the center for the detonator. Lyddite possesses high chemical and physical stability, is insensitive to percussion, and under proper conditions is safe to manufacture and handle; yet, when detonated, it is very powerful in its bursting effects. Its acidic character, however, causes it to react readily with metals, forming picrates of an unstable character. This objectionable characteristic has led to serious accidental explosions and for this reason Lyddite has been to a large extent replaced by Trinitrotoluene (T N T). The products of decomposition when explosion takes place are carbon monoxide, carbon dioxide, hydrocyanic acid, nitric oxide, nitrogen, water, and residual carbon.

LYDGATE, JOHN, an English poet; born in Lydgate, near Newmarket, England, in 1370. He was a monk of Bury St. Edmunds. He translated Benoit de St. Maure's "History of Troy" at the command of Henry V.; wrote a poem on the "Battle of Agincourt," and one on the coronation of Henry VI.; his "Story of Thebes" is written as though it were one of the "Canterbury Tales" of Chaucer. He wrote also ballads that became popular. He died about 1451.

LYDIA, in ancient geography, a country of Asia Minor, bounded on the W. by Ionia, on the S. by Caria, on the E. by Phrygia, and on the N. by Mysia. It was celebrated for its fruitful soil and for its mineral wealth, particularly for the gold of the river Pactolus and of the neighboring mines, but was infamous for the corruption of morals which prevailed among its inhabitants, and especially in Sardis, its capital. Lydia attained its highest prosperity under the dynasty of the Mermnadæ (about 700-546 B. C.). The first of this dynasty was the half mythical Gyges; the last was the famous Crœsus, celebrated for his prodigious wealth.

LYE, a solution of an alkali; water impregnated with alkaline salt imbibed from the ashes of wood. Used in soap-making, in neutralizing an acid, in removing grease from objects, such as thin iron plates in the operation of tinning, etc.

LYELL, SIR CHARLES, a British geologist; born in Kinnordy, Forfarshire, Scotland, Nov. 14, 1797. He was educated at Oxford, began to study law, but afterward resolved to devote his time and fortune to geological research. For this purpose he visited the continent of Europe and the United States. He became professor in King's College, London, in 1831; president of the Geological Society in 1835, 1836, 1849, and 1850; of the British Association in 1864. He distinguished himself as an opponent of the old catastrophism in geology. His first important work was the "Principles of Geology" (1830-1833). Another important work was the "Antiquity of

Man" (1863). Lyell was knighted in 1848, and made a baronet in 1864. His "Life and Letters" were published in 1881. He died in London, England, Feb. 22, 1875.

LYLY, JOHN (lil'i), an English dramatist; born in 1554. He was graduated at Oxford in 1573; went to London, where he engaged in literary work and tried to establish himself at court; was a member of Parliament in 1589, 1593, 1597, and 1601. He is noteworthy principally on account of his two books "Euphues, or the Anatomy of Wit" (1579), and "Euphues and his England" (1580), which were the first serious attempts in English to use words as mere musical notes, quite subordinating the matter to the sound. His influence is clear and strong on Sidney and Spenser. He died in London, in 1606.

LYME REGIS, a seaport and watering-place of Dorsetshire, England, at the mouth of the Lyme rivulet, 5 miles S. E. of Axminster and 23 W. of Dorchester. The Cobb breakwater, dating from the 14th century, was reconstructed by government in 1825-1826. Lyme Regis beat off Prince Maurice (1644), and was Monmouth's landing-place (1685). Natives have been Sir George Somers, Captain Coram, and Miss Mary Anning, the discoverer of the Ichthyosaurus and Plesiosaurus in the Lias rocks here, which are largely quarried.

LYMPH, a term in physiology. The chief difference between chyle and lymph is the more complete state of preparation for the operations of nutrition in lymph, owing to the smaller proportion of solid matter, and the almost total absence of fat; it is comparatively transparent, high in the scale of nutrition, bearing a strong resemblance to blood without the red corpuscles. In botanical physiology, the sap of a plant.

LYMPH, VACCINE. See VACCINATION.

LYMPHATIC GLANDS, in anatomy, the absorbent system for the transmission of the lymph, allied to the lacteal system, and appearing also first in fishes, then reptiles, then mammals. Their chief use is to effect a change in the materials absorbed, and render them more fitted for introduction into the blood. Lymphatics are found in most parts of the animal tissue, except the brain and spinal cord, the eye, bones, cartilages and tendons, the membranes of the ovum, the umbilical cord, and the placenta. Lymphatic vessels, like arteries and veins, have three coats, an external, middle, and internal; they are also supplied with valves.

LYNCH, CHARLES, a Virginia planter; born in 1736. He was a Revolutionary soldier, and after the war took up his residence in Pittsylvania co., Va. The region in which he lived became at one period of the Revolution infested by bands of Tories and outlaws; deserters from both armies added strength and semblance of organization to their operations. Wherever they appeared the terror-stricken inhabitants were plundered, harassed, and mercilessly subjected to every variety of insult and outrage. Col. Lynch, with a band of followers, pursued these outlaws and when any of them fell into his hands they were not taken at once to a tree and hanged or tied to a stake and shot; a jury was selected from Lynch's men, over which he presided as judge; the captives were tried separately, the accused being allowed to make his own defense, and to show cause, if he could, why he should not be punished. If found guilty the punishment was inflicted on the spot. He died in 1796.

LYNCHBURG, a city in Campbell co., Va., on the James river, and the Norfolk and Western, the Southern, and the Chesapeake and Ohio railroads; 66 miles N. of Danville. It is an important manufacturing city; has several foundries, rolling-mills, tobacco factories; manufactories of farming implements and furniture; and has an abundant water-power furnished by the James river. The chief industry of Lynchburg is the handling, shipping, and manufacture of tobacco. The city is the seat of Randolph-Mason Woman's College; Virginia Christian College and several institutions; has gas and electric light plants, waterworks, National banks, daily and weekly periodicals. Vast fields of coal, iron ore, and granite are in the neighborhood. Pop. (1910) 29,494; (1920) 30,070.

LYNCHING, a term used in the United States, meaning the punishment of death inflicted on supposed offenders by a mob of people, without any trial of the accused being held. The practice of lynching was hardly ever resorted to in the United States until after the Civil War, except in the extreme frontier sections. With the emancipation of the negroes and the "Reconstruction" period, the Ku-Klux-Klan began a systematic terrorizing of the negro population. It became a written law in the South that no negro accused of the rape of a white woman should be allowed the privilege of a trial. Soon lynchings spread to the North and West, and were no longer confined to negroes accused of rape. In the thirty years from 1885-1915 over

3,500 people, almost all negroes, were thus lawlessly put to death. In their lawless acts few members of the mob ever suffer, as the case against them must be tried in the district where the local officers are sympathetic with the lynching. Many lawyers and public men are advocating making lynching an offense against Federal law and thus make punishment for participation in it much more certain.

LYNCH LAW, punishment, especially capital, inflicted by private individuals, independently of the legal authorities.

LYNDSAY. See LINDSAY.

LYNN, a city in Essex co., Mass., on Massachusetts Bay, and the Boston and Maine and the Boston Revere Beach and Lynn railroads; 5 miles S. W. of Salem, and 11 miles N. E. of Boston. The city contains the villages of East Lynn, Glenmere, Highlands, Linwood, Lynnmere, West Lynn, and Wyoma. The chief industries are the manufacture of shoes in which it is the first city in the world, morocco leather, and electrical appliances, machinery, and foundry products, and patent medicines. There are two public libraries, National and savings banks, waterworks owned by the city, daily, weekly, and monthly periodicals. Lynn was organized as a city in 1850. Pop. (1910) 89,336; (1920) 99,148.

LYNX, a common name for the different varieties of *Felis lynx*, or, as some zoölogists think, of the different species of the genus *Lyncus*. The Greek *lyngx* was probably the caracal. Lynxes shared



LYNX

with leopards the duty of drawing the chariot of Bacchus; Pliny calls them the most "sharp-sighted of all quadrupeds," hence the epithet lynx-eyed. The lynxes are all of moderate size, but larger than the true cats; limbs long, tail short and stumpy; ears tipped with a pencil of hair, the cheeks bearded, and pads of the feet overgrown with hair; color, light-brown or gray, more or less spotted with a darker shade. They are fierce and savage, and prey on sheep and poultry. Their skins are valuable as fur. *Felis lynx* is the common lynx, found in Scandinavia, Russia, the N. of Asia, and formerly in the forest regions of central Europe; *F. cervaria* is a native of Siberia; *F. pardina* of Turkey, Greece, Sicily, Sardinia, and Spain; and *F. isabellina* of Tibet. The New World has also four lynxes: *F. canadensis*, the Canada lynx, the most N. species; *F. rufa*, the bay or red lynx, extending nearly over the United States, but giving place in Texas and the S. of California to *F. maculata*, and in Oregon and Washington to *F. fasciata*. Professor Flower is of opinion that, on further investigation, all these will be found to be varieties of a single species.

In astronomy, a constellation of Hevelius, between the head of Ursa Major and the star Capella. None of the stars in the group are larger than the fourth magnitude.

LYON, MARY, an American educator; born in Buckland, Mass., Feb. 28, 1797. After more than 20 years of teaching, she founded at South Hadley, Mass., the Mount Holyoke Female Seminary, of which she was president until her death. Many of her pupils afterward established schools on the same plan. She died in South Hadley, March 5, 1849. See MOUNT HOLYOKE COLLEGE.

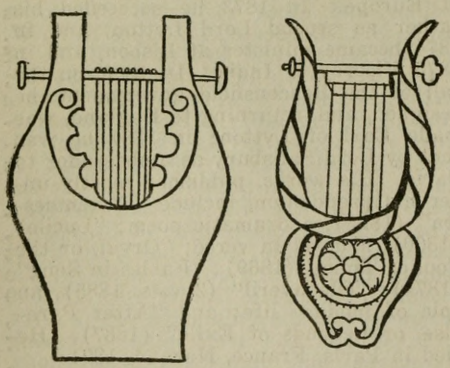
LYONS (lē-ôn*g*'), a city of France, capital of the department Rhône, and the second of the republic in population and commercial importance, situated chiefly on a peninsula between the rivers Rhône and Saône, and on the Paris and Marseilles and other railroads, 275 miles E. N. E. of Bordeaux, 172 miles N. N. W. of Marseilles, and 245 miles S. E. of Paris; lat. 45° 45′ 44″ N., lon. 4° 49′ 34″ E.; is the great warehouse of the S. of France and of Switzerland; principal manufacture silk stuffs, giving employment directly or indirectly to 100,000 hands. It is the seat of an archbishop, and is the *chef-lieu* of the 7th military division. The cathedral and Church of St. Nizier, the Hotel de Ville (town hall), the finest edifice of the kind in the country, the hospital, the public library with 130,000 volumes, and the Palais des Beaux Arts, are perhaps the most notable among numerous and important institutions. There are also a university-academy, a veterinary school—the first founded in the country—schools for agriculture, medicine, the fine arts, etc. The two rivers are crossed by 24 bridges: 12 over the Saône, 11 over the Rhône, and one at the confluence. The quays, 28 in number, are said to be the most remarkable in Europe. There are several large and important suburbs—La Guillotière, Les

Brotteaux, La Croix-Rousse, etc.; several fine squares, of which the Place Bellecour is one of the largest in Europe. The fortifications extend in a circle of 13 miles round the city. Lyons, the ancient Lugdunum, was founded about 42 years before the Christian era, and suffered greatly during the Revolution from the conflicts of hostile parties. It is the birthplace of Germanicus, the emperors Claudius, M. Aurelius, and Caracalla; of Jussieu, Jacquard, and Camille Jourdan. Pop. about 525,000.

LYONS, GULF OF, a bay of the Mediterranean, on the S. E. coast of France; principal ports Toulon, Marseilles, and Cette.

LYRA, in anatomy, a triangular portion of the *corpus callosum*, marked with transverse longitudinal and oblique lines. In astronomy, the Lyre or Harp, one of the 20 ancient northern constellations. It is situated to the S. E. of the head of Draco, having Hercules on the W. and S. and Cygnus on the E. Though a small constellation, it contains the large star Vega, with nearly 20 others visible to the naked eye, and, according to Bode, 166 in all, including telescopic stars. In zoölogy, a subgenus of *Brachiopoda*, genus *Terabratella*.

LYRE, one of the most ancient stringed instruments. The word lyre (*lyra*) does not occur in Homer; he speaks only of the citharis and phorminx. The distinction between a citharis (or guitar) and a lyre is that the neck of



LYRES

the former runs behind the upper part of the strings, while the strings of the latter are free on both sides. Its invention is ascribed to the Grecian Hermes (in Latin Mercury), who, according to Homer's story, gave it to Apollo, the first that played on it with method and accompanied it with poetry. The invention of the primitive lyre, with three strings, is ascribed to the first Egyptian Hermes.

LYRE BIRD, *Menura superba* (or *novæ hollandiæ*), an insectivorous Australian bird, placed by Professor Huxley in his Coracomorphæ. Habitat New South Wales, the S. part of Queensland,



LYRE BIRD

and perhaps some parts of the colony of Victoria. The lyre bird is not so large as a hen-pheasant; plumage, sooty-brown, relieved by rufous on chin, throat, some of the wing-feathers, and the tail-coverts. The 16 rectrices are developed in the male in the extraordinary fashion that gives the bird its English name. The two exterior have the outer web very narrow, and the inner very broad, and they curve at first outward, then somewhat inward, and near the tip outward again, bending round so as to present a lyre-like form. The middle pair of feathers have the outer web broad and the inner web very narrow; they cross near their base, and then diverge, bending round forward near the tip. The remaining 12 feathers are thinly furnished with barbs and present a hair-like appearance.

LYRIC POETRY, originally poems intended to be sung to the accompaniment of the harp or lyre; now poems intended for musical recitation, and especially poems expressing or referring to the poet's individual thoughts and emotions, as distinguished from epic or dramatic poetry, which is concerned with external circumstances and events.

LYS (lēs), or **LEYE** (lī'e), a tributary of the Scheldt, rises in France near the little town of Lysbourg, in the department of Pas-de-Calais, and flows in a N. E. direction, joining the Scheldt at Ghent in Belgium after a course of 130 miles. During the World War the Lys river was the scene of some of the most terrific fighting between the Allies and the Germans.

LYSANDER, a Spartan naval and military commander; lived in the 4th century B. C. He had the command, 407 B. C., of the Spartan fleet off the coast of Asia Minor, where he defeated the Athenians under Antiochus, and gained great influence, among both the Greeks and Persians. Lysander fell at the battle of Haliartus in 395.

LYSIMACHIA (lis-i-mā'ki-ä), loosestrife, a genus of *Primulaceæ*, family *Primulidæ*. The calyx is five-partite, the corolla rotate, the stamens glabrous or glandular, the capsule opening at the summit, with 5 to 10 teeth or valves. The herb grows erect or creeping. Known species, 40, chiefly from the temperate zone. Four (*Lysimachia vulgaris*, *L. nemorum*, *L. nummularia*, and *L. thyrsiflora*) are British. The first and second are the most common; they have yellow flowers.

LYSIMACHUS (lī-sim'a-kus), one of the generals and successors of Alexander the Great; born in 361 B. C. On the death of Alexander, 323 B. C., Thrace and the neighboring countries were the share of Lysimachus, who became also King of Macedonia in 286. The murder of his son Agathocles, at the instigation of his wife Arsinoe, provoked a revolt in Asia; Seleucus took up the cause of the widow Lysandra, and Lysimachus was killed in the battle which ensued, 281 B. C. He had assumed the title of king in 306. He was founder of a city on the Hellespont, named after him Lysimachi.

LYSIMETER, a water-tight box or cylinder for collecting and measuring rain water which percolates through the soil.

LYSOL, a disinfectant and antiseptic preparation, consisting of alkali compounds of the higher phenols, mixed with fatty and resinous soaps, manufactured by boiling a mixture of tar oils, fats, and resins with alkali. It is a brown, oily, poisonous liquid, possessing a marked odor of creosote. Specific gravity 1.042, soluble in water, alcohol, chloroform, ether, and benzene.

LYTTELTON, a port of New Zealand on South Island in the province of Canterbury. It is an important seaport, having an excellent harbor and shipping accommodations. Pop. about 5,000.

LYTTON, EDWARD, LORD LYTTON. See BULWER-LYTTON.

LYTTON, EDWARD ROBERT, EARL OF, pseudonym OWEN MEREDITH, an English poet, diplomatist, and statesman; born in London, England, Nov. 8, 1831. He was educated at Harrow and at Bonn. In 1849 he went to Washington as an attaché and private secretary to his uncle, Sir Henry Bulwer; and subsequently he was appointed attaché, secretary of legation, consul or chargé d'affaires at most of the large capitals of Europe. In 1873 he succeeded his father as second Lord Lytton, and in 1874 became minister at Lisbon, and in 1876 Viceroy of India. In 1880, on the fall of the Beaconsfield government, he resigned, and, returning to England, was made Earl of Lytton; in 1887 he was sent by Lord Salisbury as ambassador to Paris. His works, published mostly under his pseudonym, include "Clytemnestra" (1855), a dramatic poem; "Lucile" (1860), a novel in verse; "Orval, or the Fool of Times" (1869); "Fables in Song" (1874); "Glenaveril" (2 vols. 1885), an epic of modern life; and "After Paradise, or Legends of Exile" (1887). He died in Paris, France, Nov. 24, 1891.

M

M, m, the 13th letter and the 10th consonant of the English alphabet, classed among the liquids. M has but one sound in English, as in man, much, time. It is always sounded in native English words, but is silent in some few words, as mnemonic, which are derived from other languages. M has been lost from some of the oldest English words.

As a symbol M is used: In numerals: For 1,000; with a dash over it for 1,000,000.

MAARTENS, MAARTEN (real name, Jozua M. W. Schwartz). A Dutch novelist, born in 1858. His boyhood was spent in England, his school and university years in Germany and Holland. Later he spent much time on the Riviera and in Paris. His cosmopolitan training led him to write of Dutch life in a charming and yet objective way that did not altogether please his countrymen. He published his works in English, although he resided near Utrecht, Holland. The best known of his works are "The Greater Glory" (1894); "God's Fool" (1892); "My Lady Nobody" (1895); "Eve" (1912).

MAAS. See MEUSE.

MAÁSIN, seaport, province of Leyte, island of Visayas, Philippines, 76 miles distant from Tacloban on the S. W. Well laid out, with good streets and handsome buildings. The town has a growing trade, both import and export, hemp being its chief product. Pop. about 20,000. (2) Town in Iloilo, Pánay, Philippines, 18 miles N. W. of Iloilo. Pop. 9,700.

MAASTRICHT. See MAESTRICHT.

MAB, the name of a fairy celebrated by Shakespeare, and other English poets. The name has been variously derived; but the most probable derivation of it is from the Cymric *mab*, a child. According to Voss and others, Mab was not the queen of the fairies, that dignity having been ascribed to her from a mistaken use of the old English word queen, or quean, which meant only a woman.

MABALACAT, Philippine Islands. A town of Luzon, province of Pampango; is situated on the Manila-Dagupan railway, 16 miles N. of Bacolor. Pop. about 10,600.

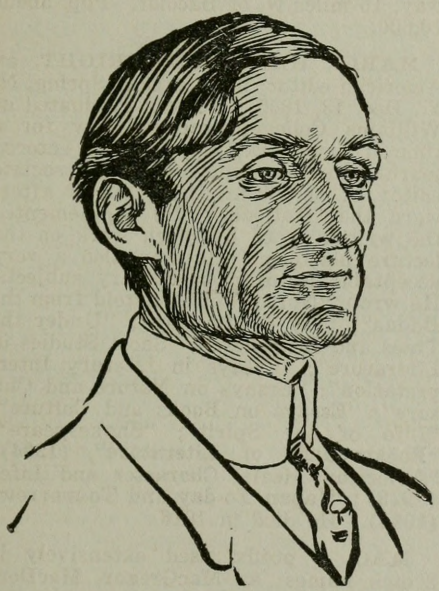
MABIE, HAMILTON WRIGHT, an American editor; born in Cold Spring, N. Y., Dec. 13, 1845. He was graduated at Williams College, practiced law for a time in New York City, and then entered journalism, becoming in 1879 associate editor of the "Christian Union" afterward the "Outlook." He supplemented the written word by much work on the lecture platform. He was also a very acceptable lecturer on literary subjects. He wrote "Norse Stories Retold from the Eddas"; "My Study Fire"; "Under the Trees and Elsewhere"; "Short Studies in Literature"; "Essays in Literary Interpretation"; "Essays on Nature and Culture"; "Essays on Books and Culture"; "Life of the Spirit"; "Shakespeare"; "Backgrounds of Literature" (1904); "American Ideals, Character and Life" (1913); "Japan To-day and To-morrow" (1914). He died in 1916.

MAC, a prefix used extensively in Scotch names; as MacGregor, MacDonald, etc. It corresponds with son in surnames of Teutonic origin, Fitz in those of Romance origin, Ap or Ab in Welsh surnames, and O in Irish.

MACABER (ma-kä'bur) **DANCE, or DANSE DES MORTS**, a name given to a certain class of allegorical representations, illustrative of the universal power of death, dating from the 14th century, and long a favorite subject of painting and poetry, in which persons of all ranks and ages were represented as dancing together with the skeleton form of Death, which led them to the grave.

MACADAM, JOHN LOUDON, a Scotch engineer, inventor of the system of road-making known as "macadamizing"; born in Ayr, Scotland, Sept. 21, 1756. He began in 1810 to make experiments in the construction of roads, which became a passion with him. In 1815 he was appointed surveyor to the Bristol Turnpike Trust, and remade the roads there cheaply and well. Impoverished through his labor he petitioned Parliament, and he was voted $50,000 and appointed Surveyor-general of Metropolitan Roads in 1827. He declined knighthood. He published "A Practical Essay on the Scientific Repair and Preservation of Public Roads" (1819); and "Observations on Roads" (1822). He died in Moffat, Dumfriesshire, Nov. 26, 1836.

McADOO, WILLIAM GIBBS, born at Marietta, Ga., Oct. 31, 1863. For a number of years he practiced law in New



WILLIAM G. McADOO

York and then in 1902 became president of the Hudson and Manhattan Railroad Company. His company constructed in 1904 the first tunnel under the Hudson river, a remarkable achievement in engineering and due in great measure to McAdoo's energy and skill. His management of the company's finances caused him to be recognized as one of the great financiers of the United States. He was prominent in the Democratic National Convention in 1912 and later in the campaign which elected Woodrow Wilson President. On March 4, 1913, the President appointed McAdoo Secretary of the Treasury, a post which he held until his resignation in 1919. McAdoo's task of managing the nation's finances during the struggle with Germany was performed with the same untiring energy which had characterized his private enterprises. The floating of the "Liberty Loans" and the huge sums raised by taxation were accomplished with but little opposition from the people, and the success of his financial measures made him a leading candidate for the Democratic nomination for the Presidency.

McALESTER, a city in Oklahoma at the junction of the Missouri, Kansas and Texas with the Chicago, Rock Island and Pacific railroads. As there are extensive coal mines in the region, the city's chief industry is coke making and iron manufacture. Pop. (1910) 12,954; (1920) 12,095.

MacALESTER COLLEGE, a coeducational institution in St. Paul, Minn.; founded in 1885 under the auspices of the Presbyterian Church; reported at the close of 1919: Professors and instructors, 23; students, 485. President, E. A. Bess.

McALL MISSION, the largest Protestant mission in France; founded in 1871 by the Rev. Robert Whitaker McAll (1822-1893) and his wife. It possesses more than 40 stations (about 15 in Paris), and is supported by Protestant Christians of all denominations in Great Britain and the British colonies, and the United States.

MACAO (mä-kä'ō), a Portuguese settlement on the coast of China, on the W. part of the estuary of the Canton or Pearl river, Hong Kong being about 40 miles distant, on the opposite side of the same estuary; the trade, mostly transit, is in the hands of Chinese, opium being the most important article of commerce. Camoens, in exile, here composed his "Lusiad." Pop. about 80,000.

MACARONI, or MACCARONI (ō'nē), an article of food composed of the dough of fine wheaten flour, made into long, slender tubes varying in diameter from one-eighth of an inch to an inch; it is a favorite food in Italy. Figuratively, a fop, a dandy, an exquisite. They led the fashion from 1770 to 1775. They were distinguished by the immense knot of artificial hair worn by them, a very small cocked hat, jacket, waistcoat, and small clothes very tight to the body, and a walking-stick ornamented with long tassels.

MACARONIC VERSE, properly a kind of humorous poetry, in which, along with Latin, words of other languages are introduced with Latin inflections and construction; though the name is sometimes applied to verses which are merely a mixture of Latin and the unadulterated vernacular of the author.

MACAROON (-rön), a kind of small sweetcake or sweet biscuit made of flour, almonds, eggs, and sugar.

MacARTHUR, ARTHUR, an American military officer; born in Massachusetts, June 1, 1845; enlisted in the volunteer service of the United States in Wisconsin, and was appointed 1st lieutenant of the 24th Wisconsin volunteers, Aug. 4, 1862; promoted major Jan. 25, 1864; lieutenant-colonel and brevet-colonel in May, 1865, for gallant and meritorious conduct in the battles of Perryville, Ky., Stone River, Tenn., Mission Ridge, Danridge, Ga., and Franklin, Tenn., and in the Atlantic campaign. After the Civil War he entered the regular army with the rank of lieutenant in the 17th United States Infantry; served bravely in Indian Wars; in 1889 was promoted major and detailed at Washington as assistant adjutant-general in 1889; was detailed to the Department of Dakota, and took up his residence in St. Paul. He was assigned to the Philippine expeditionary force, and reached the Philippines July 31, two weeks before the final assault on the city of Manila and took a conspicuous part in that battle, on Aug. 13, 1898. He succeeded Gen. Elwell S. Otis as commander of the Military Division of the Philippines, promoted Major-General U. S. A., in February, 1901, returned to the United States in the summer of 1901, and shortly afterward was appointed Commander of the Department of the Lakes. His last service was in command of the Pacific Department (1904-1907). He retired in 1909, and died in 1912.

MacARTHUR, DOUGLAS, an American soldier; born in Arkansas in 1880, the son of Lieut.-Gen. Arthur MacArthur. He graduated from the United States Military Academy in 1903, and was appointed second lieutenant of the Engineers in the same year. In 1903 and 1904 he served in the Philippines and in 1905 with the California Debris Commission. He was acting chief engineer officer of the Pacific Division from July to October, 1905. In 1905 and 1906 he was aide to the commanding general of the Pacific Division, and in the latter part of 1905 and 1906 he served on confidential duty in China, Japan, and other eastern countries. After other service, including the Vera Cruz Expedition in 1914, he became a member of the General Staff. In 1917 he was appointed chief of staff of the 42d (Rainbow) Division, having been previously promoted Brigadier-General. He was commander of the 84th Infantry Brigade from Aug. 6 to November, 1918, when he was appointed commander of the 42d Division. He served in this capacity until the end of the World War. He took part in most of the major engagements in which the American Expeditionary Forces participated and was with the Army of Occupation in Germany from Nov. 11, 1918, to April 12, 1919. He was appointed Superintendent of the United States Military Academy on June 12, 1919. He was awarded many decorations, both American and foreign, for gallant service in the war. He was wounded twice during the World War.

MacARTHUR, ROBERT STUART, an American Baptist clergyman; born in Dalesville, Quebec, Canada, July 31, 1841; was graduated at the University of Rochester (1867); at the Rochester Theological Seminary (1870): received the title of D. D. from Rochester Theological Seminary (1880); of LL. D. from Columbian University (1896). He was pastor of Calvary Baptist Church, New York, from 1870 to 1911, and editor of the "Christian Inquirer" and the "Baptist Quarterly Review." He published "Quick Truths in Quaint Texts"; "Calvary Pulpit, or Christ and Him Crucified" (1890); "Lectures on the Land and the Book"; "The Christic Reign" (1908); "The True Scala Santa" (1910); "Famous Johns of Christendom" (1915).

MACARTNEY, GEORGE MACARTNEY, EARL OF, a British administrator and diplomatist; born in Lissanoure, Ireland, May 14, 1737. As envoy-extraordinary to Russia, he concluded (1767) a commercial treaty; from 1769 to 1772 he was Chief-secretary of Ireland; and from 1775 to 1779 governor of Grenada, W. I., but was compelled, after an honorable defense, to give up the island to Count D'Estaing, and was himself carried prisoner of war to France, though he soon contrived his exchange. The first diplomatic mission to China from Great Britain was headed by Macartney, now an Irish viscount, in 1792; before his return home he was made an Irish earl (March 1, 1794). After undertaking a confidential mission to Italy (1795-1796), he went out as governor of the new colony of the Cape of Good Hope (1796); but ill-health compelled him to

return home in November, 1798. He died in Chiswick, England, March 31, 1806.

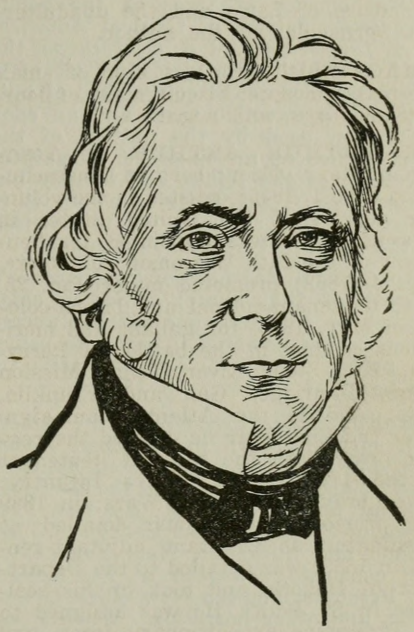
MACASSAR, or **MAKASSAR**, the extreme S. portion and a department in the residency of Celebes. Chief town and port, Macassar, on the W. coast of the S. peninsula; made a free port in 1846; pop. (1920) about 18,000. See CELEBES.

MACASSAR OIL, an oil used for promoting and strengthening the growth of the hair, so named from having been originally brought from Macassar. The name is now commonly given to a prepared mixture of castor and olive oil.

MACASSAR STRAIT, a body of water separating the islands of Borneo and Celebes. Its width varies from 75 to 140 miles and it is about 400 miles long.

MACATO, a town in the province of Cápiz on the island of Panay, Philippines. Pop. about 5,500.

MACAULAY, THOMAS BABINGTON, an English historian; born in Rothley Temple, Leicestershire, England, Oct. 25, 1800. He composed a compendium of universal history before he was eight years old; went to school at Shelford and entered Cambridge in 1818. In 1826 he was called to the bar, but not succeeding in law practice he soon abandoned it. He was in constant attendance in the galleries of the House of Commons. In 1825 he contributed to the "Edinburgh Review" an essay on Milton. Its effect was electrical, and its reception created such a blaze of popularity for its author that he at once took his place as one of the great literary characters of his time. He entered Parliament in 1830 and for three years he worked assiduously in the House of Commons and in the production of essays for the "Edinburgh Review." When the Reform Act of 1832 prevailed, and Earl Grey's cabinet triumphed, he was made a commissioner of the Board of Control for Indian Affairs, devoting himself to a thorough study of India. In 1833 he was returned for Leeds, where he advocated the abolition of slavery and engaged in debate with O'Connell. In 1834 he accepted a seat on the Supreme Council of India. In 1838 he returned to England, and was at once sent to Parliament from Edinburgh. In 1839 he became Secretary of War in Lord Melbourne's cabinet. In 1846 he was appointed Paymaster-General in Lord John Russell's cabinet, where he had time to devote himself to his "History of England," which he had now begun. He soon retired entirely to private life in order to prosecute this work, refusing a seat in the cabinet in 1852. He accepted a seat in the House, however, in 1853, but only to give public duties a small measure of his attention. In 1848 the



THOMAS BABINGTON MACAULAY

first two volumes of the "History" appeared and were followed by the last two in 1855. They were immediately and immensely popular. His essays and miscellaneous writings are still widely read both for style and content. In 1857 he was raised to the peerage as Baron Macaulay of Rothley. He died in Kensington, London, Dec. 28, 1859.

MACAW, the popular name for any member of the South American family *Araidæ*, and more strictly of the genus *Ara* (Brisson), or *Macrocercus* (*Vieillot*). The macaws are remarkable for their size and the beauty of their plumage. They are less docile than the true parrots, can rarely be taught to articulate more than a few words, and their cry is harsh and disagreable. The scarlet macaw, *Ara macao*, is a very handsome bird; the principal color is bright-red, with blue rump, vent, tail coverts, and quills, and greenish-blue and yellow wing coverts, tail, two-thirds of whole length blue and crimson. The red and blue macaw, *A. aracanga*, resembles the first species, but the middle of the wing coverts is bright yellow. The green macaw, *A. militaris*, has lively green plumage,

lower back, upper tail, and wing coverts blue, the under surface orange-yellow. The blue and yellow macaw, *A. ararauna*, is one of the handsomest of the genus.

MACAW TREE, the name given to several species of trees of the genus *Acrocomia*, natives of tropical America, as *A. fusiformis* and *A. sclerocarpa*, the fruit of which last yields an oil of a yellowish color of the consistence of butter, with a sweetish taste and an odor of violets, used by the natives of the West Indies as an emollient in painful affections of the joints, and largely imported into Great Britain, where it is sometimes sold as palm oil, to be used in the manufacture of toilet soaps.

MACBETH, the hero of Shakespeare's tragedy of that name; a Scotch chief related to the reigning King Duncan, whom he assassinated in order to usurp his power, 1040. He fell in battle by the hand of Macduff, in 1057.

McBURNEY, CHARLES, an American surgeon; born in Roxbury, Mass., Feb. 17, 1845; was graduated at Harvard College in 1866; and at the Columbia Medical School in 1870. He was Professor of Surgery in the College of Physicians and Surgeons, New York City, and consulting surgeon at St. Luke's, the Presbyterian, the New York Orthopedic, and other hospitals. When President McKinley was shot Dr. McBurney was summoned as consulting surgeon. He died in 1913.

MACCABEES, a name applied to a patriotic family whose achievements were most notable. Antiochus Epiphanes, a Syrian king, having been expelled from Egypt by the Romans, relieved his vexation by attempting to put down the Jewish worship. Palestine then being under his sway, the aged Mathathias, priest of Modin, was urged to set his people the example of sacrificing to the Greek gods. In place of doing so, he killed the king's messenger, and escaped to the mountains, his sons being companions of his flight. Their names were John called Caddis, Simon called Thassi, Judas called Maccabæus, in connection with whom the name Maccabees originated, Eleazar called Avaran, and Jonathan called Apphus. The revolt began 168 B. C., and in 165 Judas took Jerusalem, and purified the Temple, in commemoration of which the winter festival called the Feast of Dedication was annually kept, and is alluded to in John x: 22. After achieving success, a Maccabean, called also an Asmonæan, dynasty reigned for about a century, Herod the Great, slaughterer of the infants of Bethlehem, putting to death Hyrcanus, the last scion of the house, though he was inoffensive, pious, and the high priest.

The books of Maccabees: Four books of our present Apocrypha, with a fifth not in that collection.

(1) Maccabees: A work giving an account of the Maccabean struggle, with a simplicity and candor which render its statements eminently credible. It seems to have been written originally in Hebrew by a Palestinian Jew, probably a Sadducee. The Roman Church considers it an inspired production; the Protestant, uninspired but of high historical value.

(2) Maccabees: A much less valuable production than I Maccabees. It was compiled by a person whose name is not given, from a more extended narrative written by Jason of Cyrene. Jason's book seems to have been published about 160 B. C.

(3) Maccabees: A book narrating events earlier than the Maccabean times. It commences with Ptolemy IV. (Philopator) 217 B. C. The author seems to have been an Alexandrian Jew, who wrote in Greek.

(4) Maccabees: A work written to encourage the Jews, who lived in the midst of a contemptuous heathen population, to remain true to the Jewish faith. It contains the history of the Maccabean martyrdoms. It seems to have been written A. D. 39 or 40.

(5) Maccabees: This work embraced the history of 178 years, from Heliodorus's attempt to plunder the treasury at Jerusalem, 184 B. C., to 6 B. C., when Herod was on the throne. There are many parallelisms with Josephus. It is a valuable historical production.

MACCABEES, THE, a fraternal, mutual-benefit organization established for social and benevolent purposes in 1881. The present society united with the Modern Knights in 1914. The Modern Maccabees admit to membership all male whites of good moral character between the ages of 18 and 70. The order provides benefits in case of the disability of its members and at death. There are now more than 300,000 members of the organization, which controls a fund of $20,000,000. The head offices are at Port Huron, Mich., U. S. A.

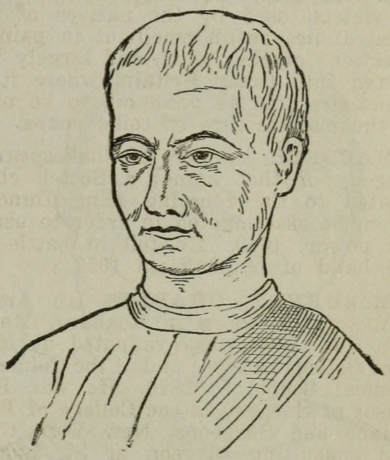
McCALL, SAMUEL WALKER, Governor of Massachusetts 1916-1918; born at East Providence, Pa., 1851, and graduated from Dartmouth 1874. He was admitted to the bar in Boston in 1876, and later became the editor of the Boston "Daily Advertiser." In 1893 he be-

gan a long career as a member of Congress from the eighth Massachusetts district, holding the office continuously for twenty years. Mr. McCall has written several important works, notably his biography of Thaddeus Stevens, in the American Statesman Series, and his "Life of Thomas B. Reed."

McCARTHY, JUSTIN, an Irish historian; born in Cork, Ireland, Nov. 22, 1830. He was a Home-Rule member of Parliament after 1879, and after the fall of Parnell, chairman of the Irish Parliamentary party. He spent three years (1868-1870) in the United States, traveling, lecturing, and engaged in literary work, being (among other things) connected editorially with the New York "Independent." He revisited the United States in 1886. He was Chief of the Home Rule party in the House of Commons from 1890 to 1896. Among his chief works are: "A History of Our Own Times" (4 vols. 1879-1880); "History of the Four Georges" (4 vols. 1889); the novels "Lady Judith" (1871); "A Fair Saxon" (1873); "Dear Lady Disdain" (1875); "The Right Honorable" (1886, with Mrs. Campbell-Praed); etc. "Modern Leaders," a collection of biographical sketches, appeared in 1872. His latest work included "The Story of Gladstone's Life" (1897); "Modern England" (1898); "Reminiscences" (1898); "The Story of an Irishman" (1904); "Irish Recollections" (1911). He died in 1912.

McCARTHY, JUSTIN HUNTLEY, an Irish journalist, son of Justin; born in 1860. He was educated at University College, and was a member of Parliament after 1884. He wrote: "Outline of Irish History" (1883); "Serapion, and Other Poems" (1883); "England Under Gladstone" (2d ed. 1885); "Camiola, a Girl with a Fortune" (1885); "History of the French Revolution" (1897); the following plays: "The Candidate"; "The White Carnation"; "His Little Dodge"; "My Friend the Prince"; "If I Were King"; "Calling the Tune" (1913); "Fool of April" (1914).

MACCHIAVELLI, or **MACHIAVELLI, NICOLO** (mak-i-a-vel'li), a Florentine statesman and historian; born in Florence, Italy, May 3, 1469. As secretary of the council named "The Ten," a post which he held for 14 years, 1498-1512, he was one of the most prominent actors in the foreign and diplomatic affairs of the republic during that period. The great capacity for business and diplomacy which he showed led to his being employed on a great number of political missions, the most important of which were those to the King of France, to whom he was sent on four occasions; to the Popes Pius III. and Julius II., to Cæsar Borgia, in whose camp he passed three months; and to the Emperor Maximilian. On the restoration of the Medici, in 1512, Macchiavelli was banished, and in the following year he was arrested and subjected to torture on the charge of conspiracy against the Medici, but was soon pardoned and liberated. The next eight years he spent



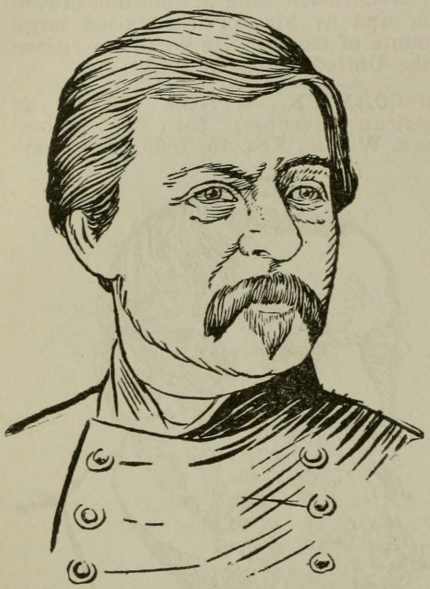
NICOLO MACCHIAVELLI

in retirement and literary labors, and was then again employed as ambassador. His principal works are: "Il Principe" (The Prince, 1532); "Storie Florentine" (Florentine History); "Discourses on the First Decate of Titus Livius"; "The Art of War;" and valuable reports of his negotiations. Letters, comedies, and other writings complete the six volumes 4to. of his works, which, both in point of matter and of style, stand in the highest rank of Italian literature. He died in Florence, Italy, June 22, 1527.

MACCLESFIELD, a town in Cheshire, England, near Manchester. Important textile and silk mills, and the coal mines in the vicinity make it an important manufacturing city. The city owns the water and gas works, as well as many quarries and markets. A free library and technical schools are supported by the municipality. Pop., about 35,000.

McCLELLAN, GEORGE BRINTON, an American military officer; born in Philadelphia, Pa., Dec. 3, 1826; was graduated at the United States Military Academy in 1846; joined the army as 2d lieutenant of engineers; took an active part in the Mexican War, where he distinguished himself under General Scott, in the battles of Contreras, Churubusco,

Molino del Rey, and Chapultepec, and was promoted to a captaincy; was one of the three American officers sent to observe the campaigns in the Crimea. At the commencement of the Civil War in 1861, he was appointed Major-General of the Ohio volunteers, but by the advice of General Scott he was tendered, by President Lincoln, the position of Major-General of the army. After a successful campaign in West Virginia, he commanded and reorganized the Army



GEN. GEORGE B. McCLELLAN

of the Potomac; in the spring of 1862 invaded Virginia, and advanced near to Richmond, but was defeated in a series of battles in July, and compelled to retreat and finally to evacuate the peninsula; after the defeat of General Pope in the second battle of Bull Run, in 1862, which was followed by a Confederate invasion of Maryland, he reorganized the army at Washington, marched rapidly N., met the forces of General Lee at Antietam, and compelled him to recross the Potomac; he followed the Confederates into Virginia, but being opposed to the policy of the extreme war party he was superseded by General Burnside. In 1864 he left the army and was the Democratic candidate for the presidency. He died Oct. 29, 1885.

McCLELLAN, GEORGE BRINTON, son of Gen. McClellan, named above. Graduate of Princeton. Admitted to the bar, 1892. President New York Board of Aldermen, 1893-1894. United States Congressman, 1895-1903. From 1903 to 1909 he was Mayor of New York City. He was a member of the staff of Princeton University as Stafford lecturer and professor of economic history from 1912. He wrote "The Heel of War" (1915).

McCLERNAND, JOHN ALEXANDER, an American soldier and lawyer; born in Breckenridge co., Ky., May 30, 1812; admitted to the bar in 1832; in same year volunteered against the Sac and Fox Indians; was member of the Illinois Legislature in 1837-1842; and of Congress, 1843-1851; re-elected in 1858. At the commencement of the Civil War he joined the Union forces and was made a Brigadier-General of volunteers. For his services at Fort Donelson he was promoted Major-General. He also took part in the battle of Belmont and led a division at Shiloh. He relieved Sherman in command of the army before Vicksburg in 1863. He led the 13th Army Corps till July, 1863, and resigned in November, 1864. He was district judge for the Sangamon, Ill., district in 1870-1873. He died in Springfield, Ill., Sept. 20, 1900.

MacCLINTOCK, SIR FRANCIS LEOPOLD, a British naval officer and Arctic explorer; born in Dundalk, Ireland, in 1819. At an early period of his career he devoted his attention to the problem of the Arctic N. W. passage, and succeeded, in the course of several voyages to the North Pole, in making many and important discoveries, besides ascertaining the fate of Sir John Franklin. He wrote "Narrative of the Discovery of the Fate of Sir John Franklin and His Companions" (1860). He was commander-in-chief of the North American and West Indian Station in 1879-1882; was knighted in 1891. He died Nov. 17, 1907.

McCLOSKEY, JOHN, an American Roman Catholic prelate; born in Brooklyn, N. Y., March 20, 1810. In 1834 he was ordained priest; in 1844 was made coadjutor of the diocese of New York; in 1847 was transferred to the see of Albany; in 1864 was made Archbishop of New York; in 1875 was appointed cardinal-priest. The history of his life is the history of the progress of the Roman Catholic Church in New York. He died in New York City, Oct. 10, 1885.

McCLURE, SIR ROBERT JOHN LE MESURIER, a British Arctic explorer, the discoverer of the Northwest Passage; born in Wexford, Ireland, Jan. 28, 1807; entered the navy in 1824; served in Back's Arctic expedition in 1836; and Ross's Franklin expedition in 1848. As commander of another Franklin expedi-

tion (1850-1854) he passed in a sledge from Barrow Strait, where his ship, the "Investigator," lay, to Melville Sound, connecting with the Arctic Ocean to the W. McClure was rescued by another expedition, made K. C. B., and after serving in Chinese waters, an admiral. He died in London, England, Oct. 17, 1873.

McCOMB, a city of Mississippi, in Pike co. It is situated on the Liberty-White and the Illinois Central railroads. It is the center of a productive cotton, corn, and timber region and has important industries, including railway shops, cotton mills, brass foundries, lumber mills, etc. Pop. (1910) 6,237; (1920) 7,775.

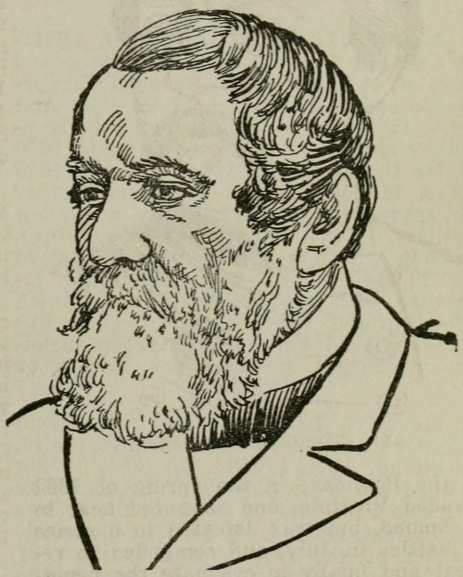
McCOOK, ALEXANDER McDOWELL, an American military officer; born in Columbiana co., O., April 22, 1831; was graduated from the United States Military Academy in 1853; was in command of the 1st Ohio Volunteers at the battle of Bull Run and was brevetted major; was made Brigadier-General of volunteers in September, 1861, and Major-General in 1862. He made a brilliant record in many famous battles of the Civil War, was brevetted Brigadier-General U. S. A., in 1865. In 1880 he became colonel of the 6th Infantry and subsequently was placed in charge of the military school at Fort Leavenworth; was promoted Brigadier-General, U. S. A., in 1890; Major-General in 1894; and was retired April 22, 1895. He died June 12, 1903.



JOHN McCORMACK

McCORMACK, JOHN, a tenor singer; born in Athlone, Ireland. Almost all his early training he received from the choirmaster of Dublin Cathedral, with whom he was associated from 1903-1905. After his successful appearance in "Cavalleria Rusticana" at Covent Garden, London, in 1907, Oscar Hammerstein brought him to America, where he achieved an enormous popular success, especially on the concert platform. In 1912 he went to Australia with the Melba Grand Opera Company. He sang with the Metropolitan Grand Opera Company in New York in 1919-1920. During the World War Mr. McCormack sung at hundreds of benefits; and by his services raised large amounts of money. He became a citizen of the United States in 1917.

McCORMICK, CYRUS HALL, an American inventor; born in Walnut Grove, W. Va., Feb. 15, 1809. The reaping machine invented by him won him many gold medals and distinctions. He established the Presbyterian Theological Seminary of the Northwest in Chicago, 1859. He died in Chicago, Ill., May 13, 1884.



CYRUS HALL McCORMICK

McCORMICK, JOSEPH MEDILL, a U. S. Senator; born at Chicago May 16, 1877. Graduated from Yale University in 1900. He became Vice-President and publisher of the Chicago "Daily Tribune" and President of the City Press Association. He identified himself with the Progressive party and, under the leadership of Roosevelt, took an active part in organizing the new party. When most of the Progressives returned to the Re-

publican party he did the same, and was elected to the House of Representatives on the Republican ticket in 1917 as Congressman-at-large for the State of Illinois. He was elected to the Senate in 1919.

McCORMICK, VANCE CRISWELL, American newspaper publisher; born in Harrisburg, Pa., in 1872. He graduated from Yale, then became publisher of the "Patriot" and the "Evening News" of his native city. He was mayor of the city in 1902-1905 and Democratic candidate for governor of the State in 1914. In 1916 he was chairman of the Democratic National Campaign Committee. In 1917 he was chairman of the War Trade Board, and was a member of the U. S. War Mission to Great Britain and France.

McCORMICK THEOLOGICAL SEMINARY, a Presbyterian divinity school located at Chicago, Ill. Cyrus H. McCormick endowed the school in 1859 and gave it its present location, and the Seminary assumed its present name in 1886 after the death of McCormick. In 1905 Mrs. McCormick and her sons further increased the endowment by a million dollars. The Seminary has 13 buildings, among which is a library with upward of 40,000 volumes. These are valued, together with the grounds, at a million dollars, and the endowment fund has now reached two millions. The Seminary charges no fees for tuition or lodging.

McCOSH, JAMES, a Scotch-American theologian; born in Carskeoch, Ayrshire, Scotland, April 1, 1811. In 1851, having joined the Free Church of Scotland, he became Professor of Logic in the college at Belfast, Ireland. In 1868, at the solicitation of the faculty and trustees of Princeton College, N. J., he came to the United States and became president of that institution. Under his guidance and the influence of his name Princeton advanced to a higher place than ever before among the universities of the United States. He wrote: "Method of the Divine Government" (1850); "Intuitions of the Mind" (1860); "The Supernatural in Relation to the Natural" (1862); "Examination of Mill's Philosophy, etc." (1866); "Christianity and Positivism" (1871); "The Development Theory" (1876); "Psychology" (1887); "Religious Aspects of Evolution" (1888); etc. He resigned the presidency of Princeton in 1888. He died in Princeton, N. J., Nov. 16, 1894.

MacCRACKEN, HENRY MITCHELL, an American educator; born in Oxford, O., Sept. 28, 1840; was graduated at the Miami University in 1857; studied at the Princeton Theological Seminary and in Europe; was pastor of the First Presbyterian Church, Toledo, O., in 1868-1880; chancellor of Western University, Pittsburgh, in 1880-1884; accepted the chair of philosophy and the vice-chancellorship of New York University in the latter year. He was chosen chancellor in 1891. Under his direction the university developed in numbers and influence, and became one of the largest educational institutions in the world. He resigned in 1910, becoming chancellor emeritus. He died Dec. 24, 1918. His publications include "Tercentenary of Presbyterianism"; "Kant and Lotze"; "A Metropolitan University"; "Leaders of the Church Universal" (3 vols.); "Lives of Church Leaders: or, Heroes of the Cross" (1900); "Urgent Eastern Questions" (1912); etc.

MacCRACKEN, HENRY NOBLE, president of Vassar College; born in 1880, the son of the clergyman and educator Henry Mitchell MacCracken (*q. v.*). Graduated an A. B. from New York University in 1900 and Ph. D. from Harvard in 1907. Instructor in English at the Syrian Protestant College, Beirut, and later also at Harvard. In 1913-1914 he was professor of English at Smith College. In the latter year he was elected president of Vassar. He is the author of several textbooks in English and of "An Introduction to Shakespeare" (1910).

MacCRACKEN, JOHN HENRY, President of Lafayette College; born in 1875 at Rochester, Vt., the son of Henry Mitchell MacCracken; graduated from New York University (A. M. 1897), Union Theological Seminary (1895), and Halle (Ph. D.) 1899. He became an instructor in New York University and later president of Westminster College, Missouri. In 1903 he returned to New York University as professor of politics, where he remained until 1914, when he was chosen president of Lafayette College. President MacCracken has been actively engaged in the educational activities of the Presbyterian Church.

McCRAE, JOHN, Canadian physician and poet; born in Guelph, Ontario, in 1872, killed in the World War in 1918. Became fellow in pathology at McGill University and collaborated with Prof. Adami on a text book on that subject. He was physician at the Alexandra Hospital when the war broke out, and was among the first to offer his services, going abroad with the Canadian Field Artillery. During his

active life as a physician he published poetical compositions, some of which gained considerable popularity. His touching poem "In Flanders Fields" was the most famous piece of verse written during the war.

McCULLOCH, HUGH, an American financier; born in Kennebunk, Me., Dec. 7, 1808; received a collegiate education; settled in Fort Wayne, Ind., in 1833, and practiced law there till 1835; and in 1856 became president of the newly established Indiana State Bank. In 1863 he was made comptroller of the currency, and in 1865 appointed Secretary of the United States Treasury. His financial sagacity and skill had much to do with adjusting conditions after the Civil War. He was Secretary of the Treasury in 1865-1869 and in 1884-1885. He wrote "Men and Measures of Half a Century." He died near Washington, D. C., May 24, 1895.

MacCULLOUGH, JOHN EDWARD, an American tragedian; born in Coleraine, Ireland, Nov. 2, 1837; came to the United States in 1853; and made his first appearance two years later in Philadelphia. With Lawrence Barrett, he managed the Bush Street Theater in San Francisco, Cal., in 1869. In 1884, both his mind and body gave way and he died in an insane asylum in Philadelphia, Pa., Nov. 8, 1885.

McCUMBER, PORTER JAMES, United States Senator from North Dakota. Born in 1858 at Crete, Ill. Graduated in 1880 from the University of Michigan and entered the practice of law a few years later at Wahpeton, N. D. While North Dakota was still a territory McCumber took an active part in politics, serving two terms in the Territorial House of Representatives. In 1898 he was elected to the United States Senate, and re-elected in 1904, 1910, and 1916. He has been chairman of the Committee on Manufactures, and of the Committee on Pensions. McCumber was a member of the "mild reservationists" group of Republicans when the Peace Treaty with Germany came before the Senate in 1919-1920.

McCUTCHEON, GEORGE BARR, novelist; born in 1866 in Tippecanoe co., Ind., and educated at Purdue University. Was first reporter on Lafayette "Journal" (1889) and later became city editor of Lafayette "Courier" (1893). His first book was "Graustark," which appeared in 1901, and this was followed a year later by "Castle Craneycrow." His later novels include: "The Sherrods" (1903); "Brewster's Millions" (1903); "The Day of the Dog" (1904); "Beverly of Graustark" (1904); "Nedra" (1905); "The Husbands of Edith" (1908); "The Rose in the Ring" (1910); "What's—His—Name" (1911); Mary Midthorne" (1911); "Her Weight in Gold" (1912); "The Hollow of Her Hand" (1912); "A Fool and His Money" (1913); "Black Is White" (1914); "The Prince of Graustark" (1914); "Mr. Bingle" (1915); "From the House Tops" (1916); "The Light That Lies" (1917); "Green Fancy" (1917); etc.

MACDONALD, ÉTIENNE JACQUES JOSEPH ALEXANDRE (mäk-do-näl), **DUC DE TARENTE**, a Marshal of France; born in Sancerre, Cher, France, Nov. 17, 1765. He served in the French Revolution as colonel, Brigadier-General, and General; was made governor of the Roman States in 1798, and of Naples in 1799; was given the rank of Marshal for his services at Wagram, July 6, 1809. He commanded the left wing in the Russian invasion in 1812; and served in the campaigns of 1813-1814. He died in his château, Courcelles, near Guise, Loire, Sept. 25, 1840.

MACDONALD, FLORA, a Scotch heroine; born in 1722. After the defeat of the young pretender, Prince Charles Edward, at Culloden, in April, 1746, she risked her own life that she might aid his escape from his pursuers. Flora was afterward imprisoned for a short time in the Tower of London. She died in Kingsburgh, March 5, 1790.

MacDONALD, GEORGE, a Scotch novelist and poet; born in Huntley, Aberdeenshire, Scotland, in 1824; educated at King's College and University, Aberdeen, and at Independent College, Highbury, London. He lectured in the United States (1872-1873). Among his best known novels are: "David Elginbrod" (1862); "Annals of a Quiet Neighborhood" (1866); "Lilith" (1895); "Salted with Fire" (1897); etc. He also wrote many poems. He died in London, Sept. 18, 1905.

MACDONALD, SIR JOHN ALEXANDER, a Canadian statesman; born in Glasgow, Scotland, Jan. 11, 1815. He was educated at Kingston, Canada; admitted to the bar in 1835; entered Parliament for Kingston in 1844; and became successively a member of the executive council, receiver-general, commissioner of crown lands, and attorney-general. He was premier in 1869-1873, when he resigned over the Pacific Railway charges, but resumed the office again in 1878, and retained it for the rest of his life. He

was an active promoter of the Canadian Pacific Railway and the Canadian confederation movement, and was a recognized leader of the Conservative party. He died in Earnscliffe Hall, near Ottawa, June 6, 1891.

MacDONOUGH, THOMAS, an American naval officer; born in New Castle co., Del., Dec. 23, 1783. In 1814 he commanded a squadron on Lake Champlain, and defeated the British under Commodore George Downie. For this service he was promoted captain and was given a gold medal by Congress. He died at sea, Nov. 16, 1825.

MacDOWELL, EDWARD ALEXANDER, American composer, born in 1861, in New York; was first instructed in music by Buitrago, Desvernine, and Teresa Carreño. At 15 entered the Paris Conservatory, two years later studying at Wiesbaden and Frankfort. At 20 was principal teacher of piano at Darmstadt. Through Liszt his First Modern Suite for piano was given in 1882 before the Allgemeiner Deutscher Musikverein. In 1888 he returned to the United States and settled at Boston, where he speedily won recognition. In 1896 he was offered the professorship of the newly founded music department of Columbia University and accepted. His later works included "Hamlet and Ophelia," "Lancelot and Elaine," "Lamia," four sonatas for piano, and smaller compositions. The last three years of his life were clouded by insanity. He died in New York in 1908.

McDOWELL, IRVIN, an American military officer; born near Columbus, O., Oct. 15, 1818; was aid-de-camp to General Wool in the Mexican War (1845); commanded the Department of Northeastern Virginia and the defenses of Washington (1861), and the Army of the Potomac at the battle of Bull Run; later commanded the Department of the Pacific (1864); of California (1866); of the East (1868); of the South (1872). He died in San Francisco, Cal., May 5, 1885.

MACDUFF, a Scotch hero, thane, or Earl of Fife; commemorated in Shakespeare's play "Macbeth."

MACE, a spice, the dried aril or covering of the seed of the nutmeg (*Myristica fragrans*), this covering being a fleshy netlike envelope somewhat resembling the husk of a filbert. When fresh it is of a beautiful crimson hue. It is extremely fragrant and aromatic, and is chiefly used in cooking or in pickles.

MACEDONIA, in ancient geography, a territory lying to the N. of Greece, which first became powerful under its king Philip, the father of Alexander the Great, and conqueror of Greece. Alexander the Great added immensely to the empire of Macedonia, and made what had only been a petty province mistress of half the world. After his death the empire was divided; dominion was lost over Greece; and the result of the battles of Cynoscephalæ (197 B. C.) and Pydna (168 B. C.) was to reduce the ancient kingdom to a Roman province. Macedonia, previous to the World War, formed a part of Turkey in Europe, and is inhabited by Wallachians, Turks, Greeks, and Albanians.

Following the Balkan Wars in 1912 and 1913, a large part of Macedonia was partitioned among the victorious countries—Greece, Serbia and Bulgaria. Greece received the larger portion, including Saloniki, Seres, Drama, Kozani, and Florina. Macedonia suffered greatly in the World War. In 1916, after a fierce struggle, the greater part of the country was in the hands of the Austro-Germans and a half civil and half military administration was established. In August, 1917, of that year an attempt was made on the part of the Allies under the leadership of General Sarrail to conduct an offensive in Macedonia as a diversion against threatened Bulgarian attacks. This, however, failed. In 1918, however, an offensive was carried on chiefly by the Serbian army, which resulted in the capture of Monastir and was the beginning of the collapse of Bulgaria. By the conditions of the treaty of peace Macedonia practically ceased as a separate entity. The greater part of its former territory was absorbed by Greece.

MACEDONIAN, pertaining to, or in any way connected with the teaching of Macedonius; as, the Macedonian heresy. The Macedonians in Church history were a sect which came into existence toward the end of the Arian controversy, taking its name from Macedonius, who became Patriarch of Constantinople in 341.

MACER, one of a number of officers attending the Supreme Courts in Scotland, appointed by the crown. Their duty is to keep silence in the court, and execute the orders of the courts, if addressed to them. They hold their office for life, and are paid by salary.

MACERATA (mä-chā-rä'tä), a walled town of central Italy, picturesquely perched on an eminence (1,207 feet), 44 miles S. of Ancona; has a cathedral, a beautiful town hall of the 13th century, and manufactures of glass and pottery; the university (1290) had in 1917 about 340 students. Pop. about 25,000.

MacGAHAN, JANUARIUS ALOYSIUS, an American war correspondent; born near New Lexington, O., June 12, 1844. He was war correspondent of the New York "Herald" during the Franco-Prussian War (1870-1871); accompanied the Russian expedition against Khiva in 1873, and the Arctic expedition on the "Pandora" in 1875. He wrote: "Campaigning on the Oxus, and the Fall of Khiva" (1874); "Under the Northern Lights" (1876); "Turkish Atrocities in Bulgaria" (1876), which appeared originally during the same year as a famous series of war letters in the London "Daily News." He is regarded by the Bulgarians as the author of their independence. He died in Constantinople, June 9, 1878.

McGIFFERT, ARTHUR CUSHMAN, an American theologian; born in Sauquoit, N. Y., March 4, 1861; was graduated at Western Reserve College in 1882 and at the Union Theological Seminary in 1885; studied abroad till 1888; was instructor in Church history at Lane Theological Seminary in 1888-1890; professor of that branch in 1890-1893; then accepted the chair of Church history at the Union Theological Seminary. Charges of heresy having been preferred against him, on which, however, he was never brought to trial, though he had positively refused to change his views, he withdrew from the Presbyterian Church in March, 1900. He was the author of "Dialogue Between a Christian and a Jew" (1888); "A History of Christianity in the Apostolic Age" (1897); "Martin Luther, the Man and His Work" (1911); "The Rise of Modern Religious Ideas" (1915).

McGILL, JAMES, a Canadian philanthropist; born in Glasgow, Scotland, Oct. 6, 1744. He emigrated to Canada before the American Revolution, engaged for some time in the Northwest fur trade, and subsequently settling in Montreal, became a successful merchant there. He was for many years a member of the Lower Canada Assembly, and subsequently a member of the legislative and executive councils. He was noted for philanthropy. He bequeathed to the college of Montreal that bears his name property valued even at that time at $120,000. He died in Montreal, Canada, Dec. 19, 1813.

McGILL UNIVERSITY, an educational institution in Montreal, Canada, founded with an endowment of land and money by James McGill in 1821. In the university year 1919-20 there were 1,300 students enrolled and 205 members of the faculty. The endowment amounted to $12,033,120; the income to $1,158,348, and the value of buildings and equipment to about $9,200,000. The library contained 206,000 volumes.

MACGILLYCUDDY REEKS, a group of rugged mountains in Ireland, in County Kerry, rising from the W. shores of the Lakes of Killarney, and covering an area of 28 square miles. Carran-Tual, the loftiest peak, not only of the Reeks, but in all Ireland, is 3,414 feet in height. Caper, the next in altitude, reaches 3,200 feet, and there are several others which exceed 2,500 feet.

McGLYNN, EDWARD, an American Roman Catholic clergyman; born in New York City, Sept. 27, 1837. For 28 years he was pastor of St. Stephen's Church in New York City, and greatly endeared himself to his flock. In the mayoralty campaign of 1886 he took sides with Henry George, and worked for him with tongue and pen. For this he was condemned by his ecclesiastical superiors, and, on being summoned to Rome by the Propaganda, he refused to submit, whereupon he was deposed from his pastorate by Archbishop Corrigan, in January, 1887, and, still refusing to go to Rome, was excommunicated by the Pope. He afterward made submission and was readmitted to the Church. He died in Newburgh, N. Y., Jan. 7, 1900.

MACH, EDMUND (ROBERT OTTO), VON, a German writer and lecturer; born in Pomerania, Germany, in 1870, and came to America in 1891. Graduated from Harvard in 1895, and became instructor in fine arts there from 1899 to 1903. He is the author of several books dealing with Greek art and painting, as well as some which deal with the more modern artists of the 19th century. When the war of 1914 broke out in Europe he was one of the chief German apologists, writing several books explaining the German point of view.

MACHALA, capital of province of El Oro, Ecuador, 70 miles south of Guayaquil, on the Gulf of Guayaquil. The agricultural resources of the district are considerable, the principal product being cacao.

McHENRY, FORT, a fortification at the entrance of Baltimore harbor, which was unsuccessfully bombarded by the British fleet in 1814. It was at this time that "The Star-Spangled Banner" was written by Francis Scott Key, an American citizen, who was detained on board a British vessel and witnessed the bombardment. See KEY, FRANCIS S.

MACHETE (mä-chā'tā), a cutlass-like tool or weapon, half knife, half cleaver, used either as a tool or a weapon in Cuba and other tropical countries.

MACHINE GUN, a weapon designed to discharge in rapid succession large numbers of small shells.

There are two distinct types of machine guns—those which operate by hand, or other externally applied power, and those which utilize the force of the recoil or explosion.

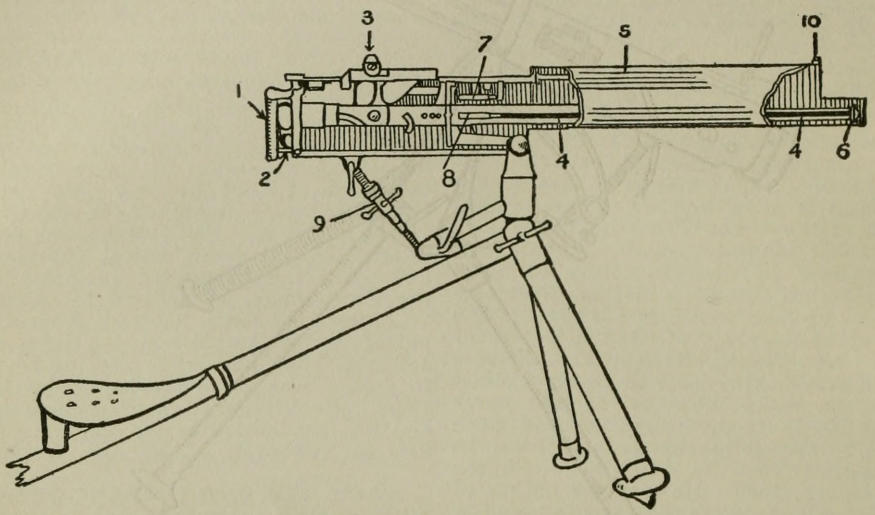


DIAGRAM OF MAXIM MACHINE GUN

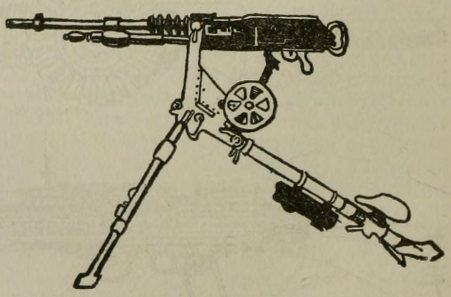
1. Handle
2. Firing Trigger
3. Rear Sight
4. Barrel
5. Water Jacket for Cooling Barrel
6. Nozzle
7. Feed Box
8. Cartridge in Barrel
9. Elevating Screen
10. Front Sight

A machine gun operates from a fixed mount, thus making it possible to cover any area, day or night, and is usually jacketed for water cooling, which characteristics distinguish a machine gun from an automatic rifle.

Some authorities credit the first use of the machine gun to the Chinese, though their history, like that of other fire arms, is a matter of dispute. There are in existence guns of Chinese manufacture which carry dates of the early 17th century, but at this time various types of mitrailleuse, a gun which discharged several barrels at the same time or in rapid succession, were known in Europe. The early machine guns were more of a novelty than a useful weapon; although they could be rapidly discharged, a long time was required for loading, and the guns were heavy and unwieldy.

The reintroduction of the breech-loading principle and the general use of the cartridge type of ammunition about 1860 paved the way for the true machine gun. Under the direction of the Emperor Napoleon III., a type of mitrailleuse was designed and manufactured by Commandant Reffye, but so much secrecy surrounded the gun that at the time of the Franco-Prussian War the lack of trained operators prevented the effective use of the weapon.

The Gatling gun, invented in 1861, by Dr. R. J. Gatling of Indianapolis, had its vogue from the latter part of the Civil War to the Spanish American War, and was by far the most successful gun of its time. A number, usually ten, of parallel barrels were securely attached to a central shaft. At the breech end

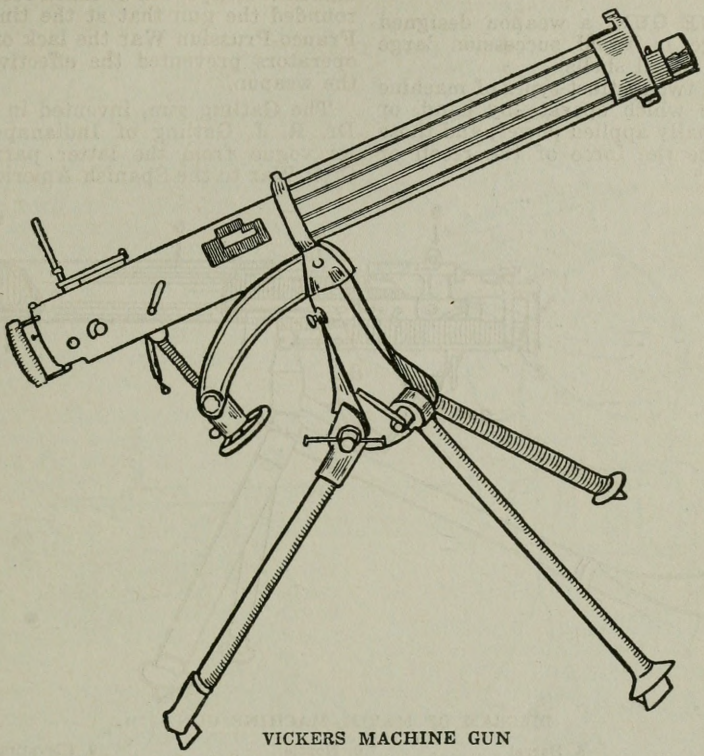


HOTCHKISS AUTOMATIC MACHINE GUN

of the barrel was a lock plate upon which there was a separate lock for each barrel, and over which was a hopper for ammunition. The main shaft was revolved by hand, the ammunition being fed from

the hopper through a grooved carrier to barrels, and by a cam and plunger mechanism the cartridge was pressed

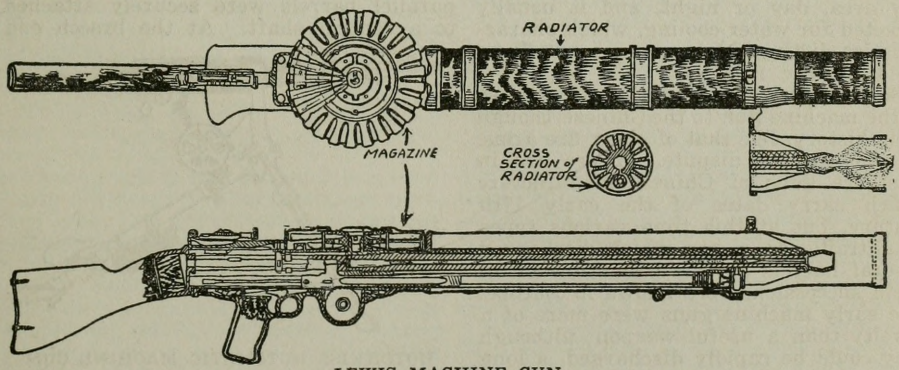
The guns which have been in use in recent times have been either of the semi-automatic or automatic type, in which use



VICKERS MACHINE GUN

home, discharged as it passed a firing cam, and removed by mechanical extractors. Various improvements were made to this gun, particularly to the loading

is made of the powder gas and recoil force for operation. The Colt machine gun (Browning patent) and Benet-Mercie guns, in which the power of recoil



LEWIS MACHINE GUN

device. The gun was used with excellent results by the British in the Zulu and Sudan campaigns. Special models of this gun have fired as many as one thousand shots a minute.

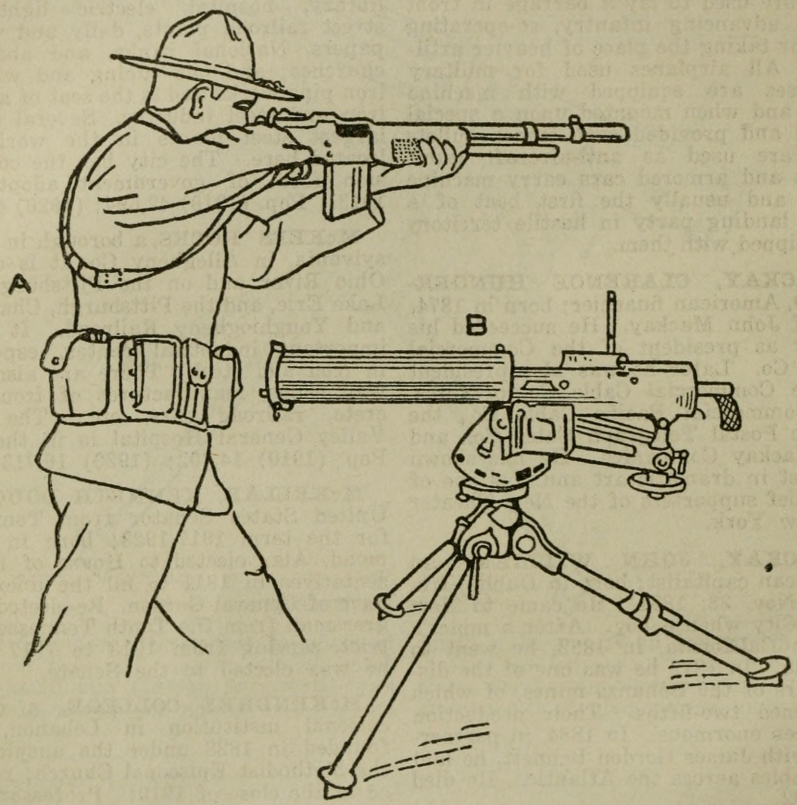
was used to operate a lever, were used until the time of the World War by the American army and navy. The Japanese Yamanouchi and the Hotchkiss gun, used by the French, applied the

pressure of the powder gas to a plunger mechanism.

At the beginning of the Great War almost every possible machine gun owned by any of the warring powers was brought into action, including many of the Colt and Hotchkiss type. During the war the tendency was to design for increased production rather than for improved models, and because of the demands of production both in the guns and ammunition a general standardization was effected. The French used the light Chauchat automatic rifle and the heavy Buteaus; the English used the Vickers heavy type and the Lewis guns in both heavy and light type.

The American army, after exhaustive tests, adopted the Browning machine gun, in both the heavy and light models, as its standard weapon. This invoked much criticism, as the Lewis gun, invented and perfected by Isaac Newton Lewis (Colonel U. S. A., retired) was being used with great success by the British. The American Marine Corps used the Lewis gun. One reason advanced for the adoption of the Browning gun was the fact that additional quantity production could be more quickly reached than with the Lewis gun.

The Browning gun is the invention of John M. Browning of Utah, a designer of automatic weapons, who has secured over one hundred and thirty patents on such weapons, among them the patent for the original Colt machine gun. Their outstanding feature is their extreme simplicity and their adaptability to quantity production. The heavy Browning gun weighs less than thirty-five pounds, is fitted with water jackets, gas actuated, and ammunition is supplied in belts. This type may be mounted in air craft, on a portable tripod, or permanently set. When used in an airplane, the water-cooling system is removed. The light type, resembling an ordinary rifle outwardly, is air cooled, weighs fifteen pounds and is fired from the hip.



THE BROWNING MACHINE GUNS

A. Browning Machine Gun Rifle. B. Heavy Browning Machine Gun

The machine gun has no tactics of its own: it is used mainly as a support to infantry, and it is said that the fire of three properly handled machine guns is equal to that of a company armed with rifles. The most effective range for machine-gun fire is between five hundred to one thousand yards, though they can be used for greater distances. Machine guns are used to lay a barrage in front of an advancing infantry, co-operating with or taking the place of heavier artillery. All airplanes used for military purposes are equipped with machine guns, and when mounted upon a special tripod and provided with tracer bullets they are used as anti-aircraft guns. Tanks and armored cars carry machine guns, and usually the first boat of a naval landing party in hostile territory is equipped with them.

MACKAY, CLARENCE HUNGERFORD, American financier; born in 1874, son of John Mackay. He succeeded his father as president of the Commercial Cable Co. Later he was also president of the Commercial Cable Co. of Cuba, the Commercial Pacific Cable Co., the Pacific Postal Telegraph Cable Co., and the Mackay Companies. He has shown interest in dramatic art and was one of the chief supporters of the New Theater of New York.

MACKAY, JOHN WILLIAM, an American capitalist; born in Dublin, Ireland, Nov. 28, 1831. He came to New York City when a boy. After a miner's life in California, in 1852, he went to Nevada. In 1872 he was one of the discoverers of the Bonanza mines, of which he owned two-fifths. Their production has been enormous. In 1884, in partnership with James Gordon Bennett, he laid two cables across the Atlantic. He died in 1902.

MACKAYE, PERCY, dramatist and poet; born in 1875 in New York, graduated from Harvard in 1897, and became a student at Leipsic, after traveling in Europe, he taught privately in New York and from 1904 has been engaged in dramatic work. His works include "The Canterbury Pilgrims," a comedy (1903); "A Modern Rendering into Prose of Chaucer's Tales" (1904); "Fenris the Wolf," a tragedy (1905); "Jeanne d'Arc," a tragedy (1906); "Sappho and Phaon" (1907); "The Scarecrow: a tragedy of the Ludicrous" (1908); "The Playhouse and the Play" (1909); "The Civic Theater" (1912); "The Present Hour" (1914); "Caliban" (1916); "Christmas Masque" (1917); "George Washington" (1920).

McKEESPORT, a city in Allegheny co., Pa., at the confluence of the Monongahela and Youghiogheny rivers, and on the Pittsburgh and Lake Erie, the Baltimore and Ohio and the Pennsylvania railroads; 15 miles S. of Pittsburgh. It is in the center of the great bituminous coal and natural gas region of the State; contains a business college, public library, hospital, electric light and street railroad plants, daily and weekly papers, National banks, and about 30 churches; and has tubing and wrought iron pipe works and is the seat of a great iron and steel industry. Several of the largest steel plants in the world are located here. The city has the commission form of government adopted in 1913. Pop. (1910) 42,694; (1920) 46,781.

McKEES ROCKS, a borough in Pennsylvania, in Allegheny Co. It is on the Ohio River and on the Pittsburgh and Lake Erie, and the Pittsburgh, Chartiers, and Youghiogheny Railroad. It is an important industrial center, especially in iron and steel. There are also railway shops, manufactures of iron, concrete, railroad cars, etc. The Ohio Valley General Hospital is in the city. Pop. (1910) 14,702; (1920) 16,713.

McKELLAR, KENNETH DOUGLAS, United States Senator from Tennessee for the term 1917-1923; born in Richmond, Ala., elected to House of Representatives in 1911 to fill the unexpired term of General Gordon. Re-elected Congressman from the Tenth Tennessee district, serving from 1913 to 1917 when he was elected to the Senate.

McKENDREE COLLEGE, a coeducational institution in Lebanon, Ill.; founded in 1828 under the auspices of the Methodist Episcopal Church; reported at the close of 1919: Professors and instructors, 15; students, 232. President, Dr. G. E. McCammon.

McKENNA, JOSEPH, Associate Justice of the Supreme Court of the United States; born in Philadelphia Aug. 10, 1843, and admitted to the bar in 1865. Elected to the House of Representatives from the second California district in 1885 from which he resigned in 1892 to become a United States Circuit Judge. President McKinley appointed him Attorney-General in his cabinet in 1897, and later to the Supreme Court on Jan. 26, 1898.

McKENNA, REGINALD, an English politician; born in England in 1863. Educated at King's College, London, and Trinity College, Cambridge (Scholar and Honors in mathematics, Honorary Fel-

low in 1916. Contested Clapham in 1892. Became a barrister in 1887 and practiced law until he entered Parliament in 1895. Was appointed Financial Secretary to the Treasury in 1905. President of the Board of Education in 1907-1908. 1st Lord of the Admiralty in 1908-1911, Home Secretary 1911-1915. Chancellor of the Exchequer in 1916. Chairman of the London Joint City and Midland Bank 1919.

MACKENSEN, AUGUST VON, German military leader; born in Leipnitz, Saxony, in 1849; educated at Halle, then entered the military service and rose to



FIELD-MARSHAL AUGUST VON MACKENSEN

high rank and acquired prominence as a tactician. At the outbreak of the war, in 1914, he had been retired. Later he was given command of the entire eastern front, including part of the Austrian forces. He was also in command of the German and Austrian armies that invaded Serbia in 1916. At the conclusion of the war he was in command of the German troops in Rumania, and was taken prisoner by the French in Hungary while attempting to return to Germany.

MACKENZIE, ALEXANDER, a Canadian statesman; born in Logierait, Perthshire, Scotland, Jan. 28, 1822; removed to Canada in 1842; in 1852 became editor of a Reform newspaper; represented Lambton in Parliament 1861-1867, and in the Dominion Parliament till 1882; was then elected for East York, and was re-elected in 1887. In 1873 he succeeded Macdonald as premier, and remained at the head of the government till 1878. He published the "Life and Speeches of Hon. George Brown" (1882). He died in Toronto, Canada, April 17, 1892.

MACKENZIE, SIR ALEXANDER, a Canadian explorer; born in Inverness, Scotland, in 1755. In the employment of the Northwest Fur Company, he explored the great river named after him from the W. end of Great Slave Lake to the Arctic Ocean (1789). He made another expedition to the W. coast (1792), and was the first white man to cross the Rocky Mountains and reach the Pacific coast. He returned to Great Britain in 1801, and was knighted. He died in Mulnain, near Dunkeld, Scotland, March 11, 1820.

MACKENZIE, SIR MORELL, a Scotch physician; born in Leytonstone, July 7, 1837; was educated at London Medical College, Paris and Vienna; obtained the Jackson prize for diseases of the larynx. In 1887-1888 he was associated with the specialists of Berlin and Vienna in the treatment of the larynx disease of the Emperor Frederick (at first, while he was Crown Prince) of Germany. He was the author of a treatise on "Diseases of the Throat and Nose," etc. He died in London, Feb. 3, 1892.

MACKENZIE, WILLIAM LYON, a Canadian journalist; born in Dundee, Scotland, March 12, 1795; emigrated to Canada in 1820; and in 1824 established the "Colonial Advocate," first at Queenstown, then at Toronto. There his denunciations of the officials resulted in the partial destruction of his printing office in 1826. In 1828 he was elected to the provincial Parliament for York, but was expelled for libel on the Assembly, and was successively expelled and re-elected till finally the government refused to issue the writ. In 1834 he was elected the first mayor of Toronto, and in 1836 he started the "Constitution." In 1837 he published a virtual declaration of independence in his paper, headed a band of armed insurgents, and demanded of the lieutenant-governor a settlement of all provincial difficulties by a convention. This demand not having been granted, Mackenzie determined to arrest the lieutenant-governor and capture the military stores in Toronto; but being met by a superior force at Montgomery's Hill, 4 miles from the city, the insurgents were

put to flight after a brief skirmish in which several were killed. Mackenzie and others effected their escape and took possession of Navy Island in the Niagara river, where he established a provisional government. He was soon, however, compelled to break up his camp, and was afterward sentenced by the United States authorities to 12 months' imprisonment in Rochester, N. Y. On the proclamation of amnesty in 1849 he returned to Canada, and was a member of Parliament from 1850 till 1858. Reforms more radical than those he contended for have since been granted. He died in Toronto, Aug. 28, 1861.

MACKENZIE RIVER, in North America, a stream having its origin, as the Athabasca, in a Rocky Mountain lake in British Columbia, flowing over 600 miles to Lake Athabasca, and 240 as the Slave river to Great Slave Lake, where it assumes the name of Mackenzie river, conveying the waters of the Great Slave Lake to the Arctic Ocean at Mackenzie Bay, after a final course of 1,045 miles, making a total river system of nearly 2,525 miles. It drains an area of little less than 600,000 square miles. The mouth of the river is closed from October to June by ice. The Mackenzie district itself is desolate and unfit for colonization; but its great tributaries, the Laird and the Peace and Athabasca rivers, drain an immense fertile country, with abundance of petroleum (the fields have more than once been reported to be the largest in the world), and some coal and lignite. The Mackenzie received its name from Sir Alexander Mackenzie, by whom it was discovered and first navigated in 1789. Sir John Franklin descended it in 1825.

MACKEREL, *Scomber scomber* (Linn.), *S. scombrus* (Cuv.), the common European mackerel. Snout pointing, under jaw projecting, gill covers large and smooth, pectoral and ventral fins in advance of the dorsal; five finlets above and below the tail, vertically over each other; tail crescent shaped. Above the lateral line the color is a fine green, varied with rich blue, and marked with broad, dark, descending lines, straight in the males, undulating in the females; under parts silvery with golden tints. The home of the common mackerel may be broadly described as the North Atlantic Ocean, south to Spain in Europe, and Cape Hatteras in America; it is common in the North Sea, and all round the British and Irish coasts. It is an extremely valuable food fish, and the mackerel fishery is only second in importance to the herring and cod fisheries.

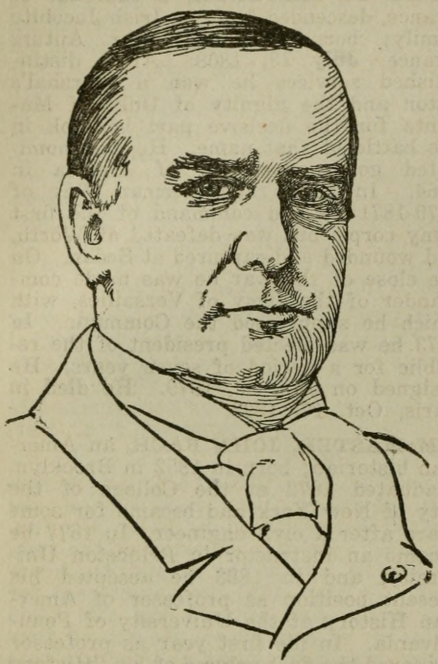
McKIM, RANDOLPH HARRISON, clergyman and writer; born in 1842 in Baltimore, graduated from the University of Virginia in 1861. He served with the Confederates in the Civil War, becoming deacon in 1864 and priest in 1866. He was assistant at Emmanuel Church, Baltimore, and later rector of Christ Church, Alexandria, Va. (1867-1875), Holy Trinity Church, Harlem, New York City (1875-1886). In 1889 he became rector of Epiphany Church, Washington. His works include: "Vindication of Protestant Principles" (1879), "Future Punishment" (1883), "Present-Day Problems of Christian Thought" (1900), "Catholic Principles and the Change of Name" (1913), "The Soul of Lee" (1918). He died in 1920.

McKINLEY, MOUNT, highest peak in North America, situated in central Alaska, about 150 miles N. of Cook Inlet. It is estimated to be about 20,500 feet in height. Its summit was first reached in 1912 by Belmore Browne and Prof. Herschell C. Parker.

McKINLEY, WILLIAM, an American statesman, 24th President of the United States; born in Niles, O., Jan. 29, 1843. He was educated at the public schools, and at the Poland, O., Academy. In May, 1861, he volunteered for the army, and entered the 23d Ohio Infantry as a private. He served four years, rising by merit and faithfulness to the captaincy of his company, and to the rank of major, when mustered out in 1865. He at once began the study of law; in 1867 was admitted to the bar, and commenced practice at Canton, O., where he afterward had his residence. In 1869 he was elected prosecuting attorney for Stark county, where his success attracted local attention. Entering politics, he was elected to Congress in 1876, and was re-elected for six successive terms. In 1882 his election was contested, and he was unseated, but triumphantly returned at the next election. His reputation in Congress rests chiefly on a tariff bill that bears his name. It was drawn by him as chairman of the Ways and Means Committee, and passed by the 51st Congress. This bill and his able advocacy of it before the House distinguished him as the leader of the Republican party on the tariff question. McKinley failed of re-election in his district in 1890, though largely reducing the adverse plurality created by a redistricting that changed the limits of the district.

In 1891 he was elected governor of Ohio by a large plurality, and re-elected in 1893. By this time his name

was frequently mentioned as a future candidate for the presidency. In 1895 a systematic canvass in McKinley's behalf was instituted by his supporters which was continued till the election of



WILLIAM McKINLEY

1896. He was nominated on a platform which stood firmly against free silver, then the chief political issue. He was elected by a plurality of 603,514, and an electoral majority of 95.

President McKinley's first term is memorable chiefly for the occurrence of the Spanish-American War and its unexpected results (see CUBA). That his policy during 1896-1900 was acceptable was shown by his unanimous renomination and re-election in 1900 by a plurality of 849,000, and an electoral majority of 137. On Sept. 5, 1901, he visited the Pan-American Exposition in Buffalo, N. Y., that day having been set apart in his honor and called the "President's Day." On the afternoon of the following day, while holding a public reception in the Temple of Music, he was shot twice by Leon F. Czolgosz, an anarchist. Hopes of his recovery were entertained for several days, but on Sept. 13 he began to sink rapidly and died at 2.15 A. M., Sept. 14. His remains were removed to Washington on Sept. 16, laid in state in the Capitol on the 17th, and taken to his home city, Canton, O.

MACKLIN, CHARLES, an English actor and dramatist; born in Ireland, May 1, 1697 or 1699. In 1733 was engaged for small parts at Drury Lane, London. He steadily rose in the public favor, till in 1741 he appeared in his great character, Shylock. From this time he was accounted one of the best actors, appearing with nearly equal success in tragedy or comedy, in passion or buffoonery, for nearly half a century. His last performance was at Covent Garden in May, 1789, when he broke down; but he survived, with an annuity of $1,000 for eight years longer. In 1735 he killed a brother actor in a quarrel over a wig, and was tried for murder. He wrote a tragedy and several farces and comedies; of these "Love à-la-Mode" (1759) and "The Man of the World" (1781) have been printed. He died in London, England, July 11, 1797.

MACLAREN, IAN. See WATSON, JOHN.

MACLE (mak'el), in mineralogy, a variety of andalusite, occurring in long, tapering crystals in clay-slate. They have the axes and angles of a different color from the rest of the crystals, owing to a regular arrangement of impurities in the interior. In transverse section they exhibit a cross or a tasselation, the outlines of which are frequently rhombs.

McLEAN, GEORGE PAYNE, United States Senator from Connecticut; born in 1857 at Simsbury, Conn., and admitted to the bar in 1881 at Hartford. In 1883 he entered politics as a Republican member of the General Assembly of Connecticut. Later in 1884 he was made clerk of the Board of Pardons, a position which he held for seventeen years. In 1901-1903 he was Governor of Connecticut, and during his term a Constitutional Convention was called, which formed a new Constitution for the State. In 1910 he was elected to the United States Senate, to which body he was reelected for the term of 1917-1923.

MACLEAN, KAID, SIR HARRY AUBREY DE, GENERAL, born in 1848 of the family of Macleans of Drinnin. Was appointed instructor to the Moorish army under the late Sultan, whom he accompanied on his expeditions. He became a colonel in the Sultan of Morocco's Body Guard, and while on a mission for the Sultan in 1907 was captured in July, 1907, by the bandit Raisuli, in whose hands he remained a prisoner for seven months. He was decorated for his services by the British Government. He died in 1920.

MACLEOD, FIONA, pen-name of WILLIAM SHARP (1856-1905), *q. v.*, a secret well preserved until after Mr. Sharp's death. The works under this name had a strong Gaelic flavor. His other style was to a marked degree different from this and he was a voluminous writer. As Fiona Macleod, besides magazine work, he published: "Pharais" (1895), a romance; "The Mountain Lovers" (1895); "The Sin-Eater and Other Tales" (1895); "The Washer of the Ford" (1896); "Green Fire" (1896); a modern version of the old Celtic romance, "The Laughter of Peterkin"; "The Dominion of Dreams" (1899); "Forthcoming, an Historical Jacobite Romance"; "The Highland Year"; etc.

MACLISE, DANIEL, a British painter; born in Cork, Ireland, Feb. 2, 1806. He was the son of a Highland soldier named McLeish. He entered the school of the Royal Academy, London, in 1828, soon exhibited at the Academy, and in 1833 made himself famous by his "All-Hallow Eve." He became royal academician in 1840. His later pictures are many of them familiar by engraving. The frescoes—each 45 feet long and 12 feet high—in the Royal Gallery of the House of Lords, depicting "The Meeting of Wellington and Blücher on the Evening of the Battle of Waterloo" and "The Death of Nelson at Trafalgar," were admitted to be the finest mural paintings hitherto executed in Great Britain. The most noteworthy pictures exhibited by Maclise, after the completion of these great works, were "Othello," "Desdemona," and "Ophelia" (1867), "King Cophetua and the Beggar Maid" (1869). He died in London, England, April 25, 1870.

McMAHON, SIR ARTHUR HENRY, born in 1862. Educated at the Military College, Sandhurst. Was awarded a Sword of Honor in 1882. Joined the 8th (King's) Regiment in 1883. Entered the Indian Staff Corps and joined the 1st Sikhs Punjab Frontier Force in 1885. A member of the Punjab Commission in 1887. He joined the Indian Political Department in 1890. Held various Indian political offices up to 1893. As British Commissioner demarcated the boundary between Beluchistan and Afghanistan in 1894-1896. Revenue and Judicial Commissioner of Beluchistan, 1901-1902. Arbitrator on boundary between Persia and Afghanistan in 1903-1905. Created a Sirdar, 1st Class, 1907. Agent to Governor-General, Beluchistan, 1905-1911. Foreign Secretary to Indian Government, 1911-1914. British Plenipotentiary for treaty between England, China, and Tibet, 1913-1914. First High Commissioner of Egypt, 1914-1916.

MACMAHON, MARIE EDME PATRICE MAURICE DE (mäk-mä-ôn*g*), **DUKE OF MAGENTA**, a Marshal of France, descended from an Irish Jacobite family; born in Sully, near Autun, France, July 13, 1808. After distinguished services he won a marshal's baton and the dignity of Duke of Magenta for the decisive part he took in the battle of that name. He was nominated governor-general of Algeria in 1864. In the Franco-German War of 1870-1871 he had command of the first army corps, but was defeated at Wörth, and wounded and captured at Sedan. On the close of the war he was made commander of the army of Versailles, with which he suppressed the Commune. In 1873 he was elected president of the republic for a period of seven years. He resigned on Jan. 30, 1879. He died in Paris, Oct. 17, 1893.

McMASTER, JOHN BACH, an American historian; born in 1852 in Brooklyn, graduated 1872 at the College of the City of New York and became for some years after a civil engineer. In 1877 he became an instructor in Princeton University, and in 1883 he accepted his present position as professor of American History at the University of Pennsylvania. In his first year as professor appeared the first volume of his "History of the People of the United States," and since that time at various intervals until 1913 seven more volumes were published, completing the history of the United States from the close of the Revolutionary to the outbreak of the Civil War. For his materials McMaster depended upon strictly primary sources, most of all the newspapers. He has gathered in his work all of importance that transpired in the United States in the period covered. Particular attention was paid to social and economic conditions as well as political, nor was the development of the Western territory neglected, as had been the case in previous works. McMaster has published a number of other works, as, "Life and Times of Stephen Girard" (1917); "A History of the War of the United States with Germany," etc.

MacMILLAN, DONALD BAXTER, American explorer; born in Provincetown, Mass., 1874. He graduated from Bowdoin College and began teaching, being head of the classical department of Swarthmore Preparatory School in Pa., 1900-1903, and instructor at Worcester Academy, 1903-1908. In 1908 he joined

the Peary North Polar Expedition and in 1910 the Cabot Labrador Party. From 1913 to 1917 he was leader of the Crocker Land Expedition. His ethnological studies of the Labrador Eskimos have been an important contribution to scientific knowledge.

MACMILLANITES, the followers of the Rev. John Macmillan, of Balmaghie, in Kirkcudbrightshire, Scotland, who, in the latter part of the 17th century, aided in laying the foundation of the Reformed Presbyterian or Cameronian Church.

MacMILLEN, FRANCIS, American violinist; born in 1885 at Marietta, O., he studied at Chicago and then at Berlin under Joachim. He was awarded 1st prize at the Brussels Conservatory at the age of 16, and made his first public appearance in Brussels in 1903. He then successfully toured Great Britain, Belgium, France, and Germany. His début in New York took place in 1906, and he has since played with leading orchestras in the principal cities of America and Europe.

MacMONNIES, FREDERICK WILLIAM, sculptor and painter; born in 1863 in Brooklyn, entered studio of Saint Gaudens in 1880, studying at night in the life classes of the Academy of Designs. He next studied art at Munich and in the Ecole des Beaux Arts at Paris. His chief work was the great fountain at the Columbian Exposition, Chicago, 1893, which was adorned by 27 figures. His statue of Diana, exhibited at Paris, and his statue of Nathan Hale, now in the City Hall Park, New York, have been greatly admired. His other works include three life-size bronze angels, at St. Paul's Church, New York, statue to James S. T. Stranahan, Brooklyn, statues to Generals Slocum and McClellan, Bacchante with infant, equestrian statuette of Theodore Roosevelt.

McNARY, CHARLES LINZA, United States Senator from Oregon; born in 1874 near Salem, Ore., he was admitted to the bar in 1898. From 1913-1915 he was a Justice of the Supreme Court of Oregon and on June 1, 1917, was appointed United States Senator for the unexpired term of 1917 to 1919. Senator McNary has played a prominent part in the Republican party, being for a time chairman of the Republican State Committee in Oregon. While in the Senate he voted with those Republicans who desired the treaty of peace with Germany ratified with mild reservations.

MacNEIL, JOHN GORDON SWIFT, a British statesman; born in Dublin, 1849. Educated at Trinity College, and Christchurch, Oxford. Admitted to the Irish bar in 1876. Professor of Constitutional and Criminal Law 1882-1888. M. P. for South Donegal 1887-1918. Queen's Counsel 1893. His constant agitation against flogging in the British navy led to the abolishment of the practice, 1906. In House of Commons he established the principle that it was incompatible for a Minister of the Crown to hold directorship in public companies. One of the seven members of the House constituting the Committee on Privileges (1908). Publications: "The Irish Parliament" (1885); "How the Union was Carried Through" (1887); "Titled Corruption" (1894); "Constitutional and Parliamentary History of Ireland" (1917).

MACOMB, city in McDonough co., Ill., 60 miles N. E. of Quincy. Has a State Normal School, and three large hospitals. Industrial establishments include foundries and plants for the manufacture of earthenware and drainpipes. Derives its name from General Macomb, who in 1814 defended Plattsburg against an English force. Pop. (1910) 5,776; (1920) 6,714.

MACOMB, ALEXANDER, an American military officer; born in Detroit, Mich., April 3, 1782; joined the army in 1799; was lieutenant-colonel of engineers and adjutant-general in 1812. He was placed in command of the Lake Champlain region in the summer of 1814. On Sept. 11, he won a brilliant victory at Plattsburg, for which he was promoted Major-General and received a gold medal and a vote of thanks from Congress. In 1828 he was appointed General-in-Chief of the United States armies and held that post till his death, in Washington, D. C., June 25, 1841. He was the author of "Martial Law and Courts-Martial."

MACON, a city and county-seat of Bibb co., Ga., on the Ocmulgee river; and on the Central of Georgia, the Southern, Georgia Southern and Florida, the Macon, Dublin and Savannah, the Georgia, and the Macon and Birmingham railroads. It is connected by steamboat routes with Brunswick and Savannah; 88 miles S. of Atlanta. It is in the heart of the cotton belt, and is the manufacturing and jobbing center for southern Georgia and neighboring States, with a population of 1,000,000, and an annual trade of $100,000,000. It contains Mercer University, St. Stanislaus College, Wesleyan Female College, Mount de Sales Academy, Gresham High School, Ballard Normal School for Colored Pupils, and

the Georgia Academy for the Blind. There are electric light and street railroad plants, waterworks, National and State banks, daily and weekly newspapers, a hospital, public library, a United States Government Building, and interesting Indian mounds. It has large cotton and knitting mills, foundries, agricultural works, lumber and planing mills. Pop. (1910) 40,665; (1920) 52,995.

MACON, a city and county-seat of Macon co., Mo.; on the Burlington Route and the Wabash railroads; 20 miles N. of Moberly. It has the County Insane Asylum, St. James' Military Academy, waterworks, gas, and electric light plants, State and National banks, and several weekly newspapers; carriage and wagon factories, flour mills, and foundry. Pop. (1910) 3,584; (1920) 3,549.

MÂCON (Matisco of Cæsar), the capital of the French department of Saône-et-Loire, on the right bank of the Saône, 41 miles N. of Lyons; a dull, modernized place, it has a 12-arch bridge, with a view of Mont Blanc; a fragment of an old cathedral, demolished at the Revolution; the fine Romanesque church of St. Pierre (rebuilt 1866); and a statue of Lamartine, who was born here; carries on an extensive trade in wines known as Mâcon, like but lighter than Burgundy, as well as in corn, cattle, etc., and has manufactures of watches, brass, faience, etc. Pop. about 20,000.

MACON, NATHANIEL, an American statesman; born in Warren co., N. C., Dec. 17, 1757. He was educated at Princeton College; in 1777 left college. While yet in the army, in 1780, he was elected a member of the Senate of North Carolina; and when the Constitution of the United States was submitted to the vote of the people of that State he firmly opposed it, as conferring too much power on the new government. He retained till the end of his life this dislike of the Constitution, and his unlimited confidence in the capacity of the people for self-government. He was elected a member of the United States House of Representatives in 1791, and continued in that office by successive re-elections till 1815. In 1816 he was elected to the Senate, where he served till 1828, when he resigned his seat, having been then a member of Congress for 37 successive years, the longest term of service that had then fallen to the lot of any legislator in the United States. He died on his plantation, in the same county where he was born, June 29, 1837.

MACPHERSON, JAMES, the translator of Ossianic poems; born in Ruthven, Inverness-shire, Scotland, Oct. 27, 1736. After a study of ancient Gaelic poetry he produced "Fingal, an Ancient Epic Poem," in six books, together with several other poems (professedly translated from originals), by Ossian, the son of Fingal, a Gaelic prince of the 3d century, and his contemporaries. Dr. Johnson treated him as an impostor, and a violent controversy ensued concerning their authenticity. In 1764 he accompanied Governor Johnstone of Florida as secretary. After his return he translated the "Iliad" into Ossianic prose; wrote a "History of Great Britain from the Restoration to the Accession of the House of Hanover." He was afterward appointed agent to the nabob of Arcot, became a member of Parliament, and died Feb. 17, 1796.

MACQUARIE (ma-kwor'ē), a tributary of the Darling, a river in Australia and a small island in the South Pacific, belonging to Tasmania, named from Gen. Lachlan Macquarie, governor of New South Wales 1809-1821.

MACRAUCHENIA (-kē'-), a genus of South American fossil herbivorous animals forming a connecting link between the palæotherium and the camel family; in form they nearly resemble the llama, but were as large as a hippopotamus.

MACREADY, WILLIAM CHARLES (-rē'di), an English tragedian; born in London, England, March 3, 1793. His father, the lessee and manager of several provincial theaters, sent him to Rugby and Oxford to be educated, but his circumstances became embarrassed, and the youth had to join his father's company at Birmingham in 1810. Afterward he played in the provinces with considerable success, and appeared at Covent Garden in 1816. In 1820 he made his first visit to America, and in 1828 played in Paris, with great success in both countries. He undertook the management of Covent Garden in 1837, and Drury Lane in 1842, but though he did much to reform the stage and cultivate the public taste for Shakespearean drama in both theaters (he himself taking the leading parts in Shakespeare's plays), his pecuniary losses required him to retire from managership. He revisited the United States in 1849; returned to England; gave a series of farewell performances, and finally retired from the stage in 1861. He died in Cheltenham, England, April 27, 1873. His "Reminiscences" appeared in 1875.

McREYNOLDS, JAMES CLARK, Justice of the United States Supreme

Court; was born in 1862, at Elkton, Ky.; graduated from Vanderbilt University in 1882, and entered the legal profession in Nashville, Tenn. In 1900 he was elected professor of law at Vanderbilt University, but continued his practice. As corporation law had become his special work he was made Assistant Attorney-General of the United States, in which position and later as Attorney-General under President Wilson he successfully prosecuted some of the great trusts for violation of the Sherman Act. President Wilson appointed him a Justice of the U. S. Supreme Court in 1914.

MACROCYSTIS (-sis'tis), a genus of *Fucaceæ*, family or tribe *Laminaridæ*. *M. pyrifera* is a giant seaweed, with a stem 700 feet long, no thicker than the finger. The branches are as slender as packthreads; the leaves long and narrow, each has at its base a vesicle filled with air, enabling the plant to float. It is met with in the ocean in the S. temperate and S. polar zones.

MACROPODIDÆ, or **MACROPIDÆ**, in zoölogy, a family of Marsupials, section Phytophaga, or in Owens' classification Diprododontia. There are six incisors in the upper jaw, and two in the lower; the canines in the upper jaw are small and wanting in the lower one; the molars are five on each side above and below. The anterior feet, which are small, have five toes, each armed with a claw; the hinder ones, which are very large, powerful, and well adapted for leaping, have but four, the inner one, or great toe, being absent. Found in Australia, Tasmania, and New Guinea. Huge Macropi are found in the post-Tertiary of Australia with representatives of the other genera. Kangaroos, one of genera, seem to have been limited to Australia before the human period began.

MACROPUS (mak'-), the generic name of the kangaroos, applied to them in allusion to their elongated hind feet. See KANGAROO.

MACRURA, or **MACROURA** (-krör'ä), long-tailed Crustaceans; lobsters, a suborder of *Decapoda*, having the abdomen greatly developed, cylindrical, the segments short, flattened, and expanded laterally; the whole terminated by a broad swimming tail. The antennæ are usually large. The feet are terminated by nipping claws. The young, on being hatched, are not very different in form from their parents. They abound in both salt and fresh water. The sub-order contains the families *Crangonidæ*, *Astacidæ*, *Thalassinidæ*, and *Palinuridæ*. They came into existence in Palæozoic times.

MADAGASCAR, a large island in the Indian Ocean, 230 miles from the E. coast of Africa, from which it is separated by Mozambique Channel; length, 980 miles; average breadth, 360 miles; area, about 228,500 square miles; pop. (1917) 3,545,264. Madagascar may be described as an elevated region, with an average height of 3,000 to 5,000 feet, overlooked by mountains rising in some cases to nearly 9,000 feet. The coast exhibits a number of indentations, mostly small, but few good harbors, being in great part rock, though in some places low and sandy. On some parts of the coast are numerous lagoons. The rivers are numerous yet few of them offer even to a moderate extent the advantages of internal navigation. The climate is oppressively hot on the coast, but temperate on the highlands of the interior. The rainy season continues from December to April. The vegetable products grown for food include rice, manioc or cassava, sweet potatoes, ground nuts, and yams. Ginger, pepper, and indigo grow wild in the woods; cotton, sugar cane, coffee, tobacco, and hemp are cultivated. Coal is found in the N. W., rice, cattle, hides, gum, india-rubber, wax, cotton, sugar, vanilla, lard, and coffee are exported to Mauritius, Réunion, and Europe. Humped cattle are found in immense herds, and form a large part of the wealth of the inhabitants, as do also sheep, goats, swine, and horses. The most characteristic of the mammals are the lemurs. The birds are numerous; snakes are rare; crocodiles, lizards, chameleons abound. The inhabitants, called Malagasy, belong to the Malayo-Polynesian stock and speak a Malayan language. The Hovas are the ruling tribe, they having extended their sway over nearly the whole island. The Malagasy show much aptitude as silversmiths, gunsmiths, carpenters, and with rude looms make handsome cloths. Capital, Antananarivo, a striking and well-built town; pop. (1917) 63,115, on a lofty hill about 200 miles inland; principal port, Tamatave, on the E. coast; pop. about 9,000; chief port on the N. W. coast is Majunga; pop. about 7,000.

Prior to 1895 the government was an absolute monarchy under Queen Ranavalona III. A French Resident, however, with a military escort, resided at the court and controlled foreign relations, so that the country was virtually a French protectorate. Much friction prevailed in 1893-1894, between the government and the French authorities, and finally France decided to make her protectorate of the island effective. The

island was made a French colony. Under French rule the colony has prospered, commerce has been developed, and in 1917 the combined imports and exports amounted to over $40,000,000. Madagascar has telegraph communication with other countries, and is a wireless telegraph station.

MADDALONI, a city in Italy in the province of Caserta, situated about fifteen miles northeast of Naples. Located in one of the most fertile sections of Italy and near the Caroline aqueduct which supplies Caserta with water. Pop. (1920) about 20,000.

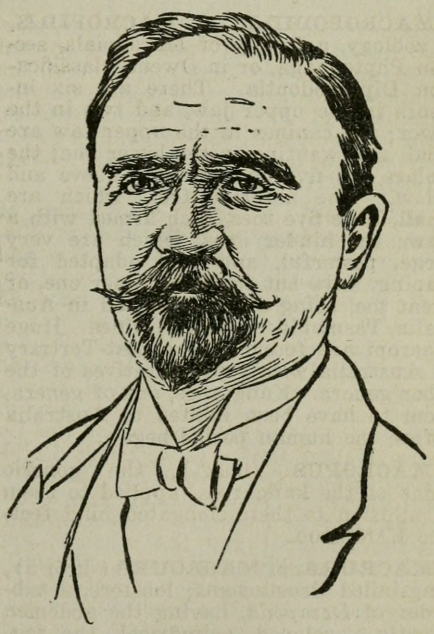
MADDER, in botany, the genus *Rubia*, and specially *R. tinctorum*. It is a trailing or climbing annual, supporting itself by its leaves and prickles. It is supplied chiefly from Holland, France, Italy, and Turkey. Indian madder, called also madder of Bengal, is *R. cordifolia;* madder of Chile, *R. augustissima* or *Relboum.*

In chemistry, the root of *R. tinctorum* is extensively used in dyeing for the production of a variety of colors, namely, red, pink, purple, black, and chocolate. The colors produced from madder are very stable, the well-known Turkey-red being one of them; and the tints and shades obtainable, according to the mordant used, are very numerous. Alizarin, or madder red, discovered by Robiquet, may be extracted with solvents, or obtained by sublimation in the form of beautiful reddish needles (see ALIZARIN). In pharmacy, madder is a tonic, a diuretic, and an emmenagogue. Brown madder, a rich red-brown pigment, prepared from the roots of *R. tinctorum.*

MADEIRA (mä-dā'ē-rä), a Portuguese island in the North Atlantic, 360 miles from the coast of Africa, 530 miles from Lisbon, 1,215 from Plymouth; length, 30 miles; breadth, 13 miles; area, 314 square miles; pop. about 175,000. The island is traversed by a central mountain ridge, the highest point of which reaches 6,000 feet; from this great spurs descend to the coast, forming lofty precipices; and in the bays formed between these volcanic cliffs are situated the villages of Madeira. Adjacent to Madeira is Porto Santo, a small island, and the Desertas, which, with Madeira itself, compose the group of the Madeiras. The staple products of Madeira are wine and sugar. The mean annual temperature is 65°, the two hottest months being August and September, and the three coldest January, February, and March. The climate is equable and the island is considered an excellent sanatorium for chest diseases. Capital and chief center of trade, FUNCHAL (*q. v.*); pop. about 25,000. The Madeiras were known to the Romans, and were rediscovered and colonized by the Portuguese in 1431.

MADEIRA, the great affluent of the Amazon, having its origin in the confluence of the Mamoré and Guaporé, at about lat. 12° S., the Beni joining 110 miles lower down, and then flowing N. E. to the Amazon, its drainage basin embracing about 425,000 square miles. From its mouth to its first falls the distance is 578 miles; above this point navigation is broken by a series of 19 falls, rapids, and cataracts for a distance of 230 miles. Its chief tributary is the Rio Teodoro, formerly Rio Duvida (River of Doubt), explored in 1914 by Theodore Roosevelt, and re-named by Brazil in his honor.

MADERO, FRANCISCO, President of Mexico; born in Coahuila 1873, and, after receiving a good education, devoted himself to the development of the large



FRANCISCO MADERO

estates belonging to his family. In 1903 he entered actively into politics, forming the Club Democratico Benitó Juarez, and leading the independent voters against Diaz. His book, "La Sucesión Presidencial en 1910," which attacked the autocratic regime of Diaz, singled him out as Diaz's logical opponent in the election then looming, and he was nominated by the National Democratic party. He was,

however, thrown into prison, and on release fled to the United States, returning to put himself at the head of an armed revolt. Diaz submitting, Madero was made president. In 1912 revolts broke out, Huerta deserting him and bringing about his downfall. He was murdered on Feb. 23, 1913, four days after his resignation. See MEXICO.

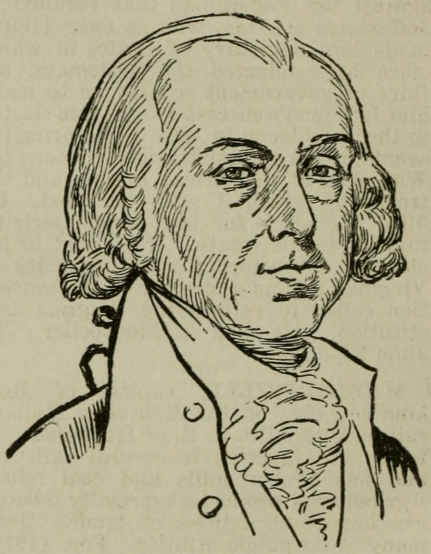
MADISON, town in Madison co., Ill., two miles from St. Louis, Mo. A dozen different railway systems meet in vicinity, and the town is almost wholly industrial. The manufacturing establishments include iron and steel mills, railroad shops, lead plants, and stone mills. The town has schools and libraries. Pop. (1910) 5,046; (1920) 4,996.

MADISON, a city and county-seat of Jefferson co., Ind.; on the Ohio river, and on the Pittsburg, Cincinnati, Chicago, and St. Louis railroad; 45 miles N. of Louisville, Ky. The city has steamboat connection with various places on the Kentucky, Ohio, and Mississippi rivers. It contains a public library, electric lights, National banks, and several daily and weekly newspapers, and the Southeastern Indiana Hospital for the Insane, and has many manufactories, ship lumber yards, shipyards, and cotton and woolen mills. Pop. (1910) 6,934; (1920) 6,711.

MADISON, a city, county-seat of Dane co., and capital of the State of Wisconsin; on the Chicago, Milwaukee and St. Paul, the Chicago and Northwestern, and the Illinois Central railroads; 75 miles W. of Milwaukee. It is situated in the Four Lake country, being built on a strip of land between Lakes Mendota and Monona. It contains the capital, county court house, county jail, University of Wisconsin, State Institution for the Insane, United States Government Building, Soldiers' Orphans' Home, and several libraries. It has electric street railroads, gas and electric lights, waterworks, National and State banks, and daily and weekly newspapers. The city is a well-known summer resort, its air being recommended as beneficial for lung diseases. It has a large trade in agricultural productions, manufactories of bicycles, machinery, farming implements, carriages, wagons, etc. Pop. (1910) 25,531; (1920) 38,378.

MADISON RIVER, a stream of Montana rising in the Rocky Mountains; at an elevation of 8,300 feet above the sea-level, running nearly N. through Madison county, passing through several deep cañons interspersed with picturesque valleys, and uniting with the Jefferson Fork of the Missouri at the Three Forks, on the W. border of Gallatin county; length about 230 miles.

MADISON, JAMES, an American statesman, 4th President of the United States; born in Port Conway, Va., March 16, 1751. He was the eldest of a family of seven children. His early education was mostly under private tutors. In 1769 he entered Princeton College, graduating in 1771. He studied law, and afterward, with some idea of entering the ministry, theology. He first attracted public attention through his efforts, in company with Jefferson and



JAMES MADISON

George Mason, to secure the religious rights of the dissenting sects in Virginia, as against the taxation and persecution to which they were subjected by the Anglican party. In 1776 he was elected to the convention that framed the Virginia constitution; in 1777 he was defeated for the Virginia Assembly, but appointed a member of the Executive Council; in 1780 entered the Continental Congress, where he served three years; and in 1784 was elected to the Virginia Legislature, where he advocated the abolition of the feudal system of entail and primogeniture, and the removal of the remaining hindrances to perfect religious freedom. In 1785 he urged a meeting of the States by delegates to perfect a common government, and was a member of the Constitutional Convention of 1787, and one of the chief framers of the Constitution of the United States. He advocated the adoption of it

in some of the ablest papers of "The Federalist." He gradually parted political company with the Federal party and refused a seat in the cabinet and the mission to France in consequence of his inclination to adopt the principles of the Republican party. During Adams's administration he remained mostly in retirement. In 1794 he married a brilliant society woman, Mrs. Todd, who afterward proved socially helpful to him in public life. He opposed the Alien and Sedition Laws that were repealed somewhat through his influence. His writings produced to some extent the reaction against the Federalists that resulted in Jefferson's election, who at once (1801) made him Secretary of State, in which office he conducted the diplomatic affairs of government so ably as to make him Jefferson's successor. He was elected to the presidency in 1808. The principal events of his administrations concern the War of 1812 with Great Britain and the treaty by which it was concluded. He filled the office for two terms, retiring in 1817 to his estate. He served in his old age as rector of the University of Virginia, and as a member of the convention called to reform the Virginia constitution. He died in Montpelier, Va., June 28, 1836.

MADISONVILLE, capital of Hopkins co., Ky., on the Kentucky Midland railroad, 40 miles S. E. of Henderson. It forms the junction to several railroads and has timber mills and coal mines. Agricultural products, especially tobacco, are important articles of trade. Owns many of its public utilities. Pop. (1910) 4,966; (1920) 5,030.

MADONNA, a word originally used in Italy, like *madame* in France, as a title of honor and dignity, but now exclusively applied to the Virgin Mary, as in other languages she is called "Our Lady." It is also applied to a number of celebrated pictures, in which the Virgin forms the sole or principal object, as the Madonnas of Raphael.

MADRAS (ma-dras'), a province of British India, occupying with its dependencies and Mysore, the entire S. of the peninsula of India, surrounded on every side except the N. by the sea, bounded on the N. by Bengal and the Central Provinces, the territory of Hyderabad and Mysore; area, 142,330 square miles; pop. about 43,000,000. It comprises 22 British districts, 3 agencies under special administration, and 5 native states, viz., Travancore, Cochin, Pudukota, Banganapalli, and Sandúr. The three chief rivers, Godavari, Krishna, and Kaveri, rise in the western Ghâts and enter the Bay of Bengal. The climate is varied; in the Nilgiri Hills it is temperate, on the Malabar coast the monsoon brings an excessive rainfall, while in the central table-land the rainfall is low and the heat almost unendurable. The soil is sandy along the coast, but there are many fertile districts; while iron, copper, lead, and coal are found in considerable quantities. There are extensive forests in the presidency, yielding teak, ebony, and other valuable timber trees. The principal vegetable products are rice, wheat, barley, maize, and other grains; sugar-cane, areca, yam, plantain, tamarind, jack-fruit, mango, melons, cocoanuts, ginger, turmeric, pepper, tobacco, oil seeds, coffee and cotton. Irrigation has been employed with excellent results. The wild animals are the elephant, tiger, chetah, jackal, wild hog, etc. The Madras administration authority is vested in a governor, with a council of three members appointed by the king, of whom one is the commander-in-chief. For legislative purposes the council is increased by nominations of the governor. In each of the 22 districts there is a collector and a sessions judge. The chief educational institution is the Madras University, an examining body granting degrees in arts, law, medicine, and engineering. The imports amount to about $30,000,000, and the exports to $60,000,000 annually.

Capital, Madras, situated on the E. or Coromandel coast of India, 835 miles S. W. of Calcutta, and 790 miles S. E. by rail of Bombay; has Fort St. George (1639), Government House (the governor's residence); churches and chapels of all denominations; the cathedral of St. George's; Presidency College; the central institution of the Free Church of Scotland's Mission; the Medical and Civil Engineering Colleges; a flourishing school of art; a central museum; public statues to Lord Cornwallis, Sir T. Munro, and General Neill. The city is supplied with water from the Red Hill Reservoir, and sanitation is carefully enforced. Though situated on an open, surf-beaten coast of the Indian Ocean, the city possesses an important maritime trade, equal to more than one-third that of the entire presidency. Madras has been greatly improved in recent years by modern facilities. It is third in size among the cities of India. The site of Madras was acquired in 1639 from the Hindu Rajah of Chandgherry, by Mr. Francis Day, the chief of the company's trading settlement at Armagon. Pop. about 525,000.

MADRE DE DIOS, chief tributary of Beni river, South America, over 900

miles long, rising in Peru, and running through Bolivia. At Rivera Alta nearly a mile wide.

MADREPORARIA, white stony corals or madrepores, a sub-order of *Zoantharia*, class *Anthozoa*.

MADRID (mä-*thrēth'*), the capital of Spain and of the province of Madrid, a part of New Castile, situated near the heart of the country, on the left bank of the Manzanares, a sub-affluent of the Tagus, and on a hilly, sandy plateau, 2,200 feet above the sea, treeless save in the vicinity of the city, and stretching away in the N. to the snow-capped Sierra de Guadarrama. One of the handsomest of European cities, it has a very modern aspect, and is partly surrounded by a brick wall 20 feet high, and pierced by 16 gates, the most notable being the Puerta de Alcalá (1759), a triumphal arch 72 feet high at the foot of the Calle de Alcalá, a magnificent street that traverses the city from N. E. to S. W. The city is girt with fine promenades and stately suburban villas embowered in beautiful gardens. On the E. side is the famous Prado, the evening resort of the people, with parterres, trees, and marble fountains. Outside the Puerta de Alcalá in the Plaza de Toros, stood the circus for bull-fights erected by Philip V. to accommodate 12,400 persons, which was taken down in 1874, when a new one was begun a little farther N.

Madrid has over 70 public squares, of which the chief are the Puerta del Sol, the center of pleasure and business, the Plaza Mayor, 398 by 306 feet, the scene of the *auto-da-fé*, surrounded by colonnades, the Plaza Oriente in front of the royal palace, containing an equestrian statue in bronze of Philip III. and 44 other statues of kings and queens, and the Plaza de las Cortes, with a fine bronze statue of Cervantes. The great building in Madrid is the Real Palacio, on the W. side, between the city and the river. It is a square, 470 feet on each side, and 100 feet high, built (1737-1750), of granite and white marble, occupying an area of 220,900 square feet, inclosing a court of 240 feet square, and containing a library of over 100,000 volumes, an armory and a numismatic collection. Madrid has also about 60 churches, several decorated by old masters, over 40 monasteries, used since 1836 for secular purposes, 24 nunneries, many large and well-equipped hospitals, several colleges or higher schools, a university, a medical school, a conservatory of music, many theaters, public libraries (the National with 650,000 volumes), several museums, a botanical garden, an observatory, an academy modeled on that of Paris, etc. The royal museum in the Prado contains one of the most famous picture galleries of the world with many paintings by Velasquez, Ribera, Murillo, Raphael, Rubens, Titian, and Van Dyck. The Escurial, a royal palace, is 26 miles N. W. of the city.

The chief manufactures are tobacco, chocolate, beer, shoes, boots, plated ware, coaches, gloves, and fans. The commerce is important, as Madrid is the entrepôt for all the interior provinces. Retail business is mainly in the hands of foreigners, mostly French, but most of the wholesale trade is carried on by native houses. The climate is described in a Spanish proverb as "three months of winter and nine months of hell." The temperature, which ranges from 18° to 105° F., is subject to frequent and sudden changes. Between the sunny and shady sides of a street the difference of temperature is sometimes as great as 20°. The prevailing winds are the parching *solano* from the S. E. and the icy N. wind from the Guadarrama. Madrid, or Majerit, is first mentioned in history in the year 932, when it was taken by Ramiro II. of Leon. A strong outpost of the Arabs, it was captured by Alfonso VI. of Castile in 1083. Philip II. made it his capital in 1560, when it was still surrounded by extensive forests. From this time it grew rapidly into a fine city and became the center of the history of the Spanish people. Pop. about 650,000.

MADRIGAL, in poetry, a little amorous poem sometimes also called a pastoral poem, containing some delicate and tender though simple thought, and consisting of not less than three or four stanzas or strophes. Madrigals were first composed in Italy, those of Tasso being accounted among the finest specimens of Italian poetry. In music, an important species of vocal polyphonic composition which reached its highest development between the middle of the 16th and the middle of the 17th centuries. Madrigals are of various kinds: (1) Simple melodies accompanied by other parts not containing counterpoint or imitation; (2) elaborate compositions full of contrapuntal devices, sometimes consisting of two or more movements. The favorite number of parts during the classical period above named was five or six.

MADURA (mä-dö'rä), a maritime district of India, in the S. of the presidency of Madras, bounded on the E. by the Gulf of Manaar, which separates Hindustan from Ceylon; area 8,401 square miles; pop. about 2,200,000. Chief town

is Madura, the third largest in the presidency; pop. about 150,000. For nearly 2,300 years Madura was the political and religious capital of the extreme S. part of India. Its Pandyan kings are mentioned by the ancient Greek geographers. In the 17th century the Nayak rulers, chiefly Tirumala (1623-1659), built here a magnificent pagoda to Sundareswara (Siva), with a hall having 1,000 (997) pillars, a fine palace, now ruined, a summer palace for the god, and a great tank. The Jesuits have been active in Madura since the time of Tirumala.

MADURA, an island of the Dutch East Indies, separated by a narrow strait from the N. E. of Java; area 1,764 square miles. It is mostly barren, but possesses numerous forests and salt marshes. Along with about 80 smaller islands, lying mostly to the E., it forms a Dutch residency; area, 2,040 square miles. The people, of Malay descent, resemble the Javanese, but are stronger, more enduring, and more enterprising; they make the best native soldiers in the Dutch colonial army. Pop. about 1,900,000.

MÆANDER (mē-an'dur), a river in Asia Minor, 200 miles long, which flows W. S. W. from Mount Aulocrene, in Phrygia, to the Ægean Sea, near Miletus. The proverbial windings of the Mæander made its name a synonym for a tortuous course.

MÆCENAS, CAIUS CILNIUS (mē-sē'nas), a Roman administrator, born about 65 B. C. For the three years 18-15 B. C., he was invested with the government of Italy, and he was always sent to Rome on any emergency, either with the Senate or the people, in case he was absent with Augustus. His chief fame was gained as a patron of learning. Vergil, Horace, and Propertius are best known to us as the guests of his hospitable mansion on the Esquiline Hill. Some poetical fragments of his remain to this day. He died in 8 B. C.

MAELAR (mā'lär), or, **MÄLAR**, a lake of Sweden, runing inland from the Baltic; length about 81 miles; average breadth, 13 miles; area, 525 square miles; contains upward of 1,200 islands. Its E. end is closed by Stockholm, where its waters are poured into the Baltic, the difference of level being about six feet. It is surrounded by the districts of Stockholm, Nykoping, Upsal, and Vesteras.

MAELSTRÖM (mēl'struhm) ("grinding stream"), a famous whirlpool, or more correctly current, between Moskenäs and Vaerö, two of the Lofoden Isles.

MAESTRICHT (mäs'triht), the capital of the Dutch province of Limburg, 19 miles N. N. E. of Liége, situated on the left bank of the Meuse, a stone bridge (1683) connecting it with the suburb of Wijk; formerly an important fortress, it is still a garrison town, but the fortifications were dismantled in 1871-1878; the town hall, with spire and carillon (1662), contains many paintings and a library; and in the three-towered church of St. Servatius (12th-14th century), the cathedral once, is a "Descent from the Cross," by Van Dyck. But Maestricht's great sight is the subterranean quarries of the Pietersberg, formerly called Mons Hunnorum (Mount of the Huns, 330 feet). Their labyrinthine passages, 12 feet wide, and 20 to 50 feet high, number 16,000, and extend over an area of 13 by 6 miles. They are supposed to have been worked first by the Romans, and, among other fossils, have yielded two heads of the huge MOSASAURUS (*q. v.*). The manufactures include glass, earthenware, and carpets; and the trade is considerable. Maestricht, called by the Romans Trajectum ad Mosam to distinguish it from Trajectum ad Rhenum (Utrecht), was six times besieged between 1579 and 1814, and in 1830 was the only town that withstood the insurgent Belgians. Pop. about 40,000.

MAETERLINCK, MAURICE, a Belgian poet and essayist; born in Ghent, in 1862. After spending some years in a Jesuit school, where he studied philosophy and law, he became a barrister in 1887, but did not actually practice the profession, and in 1896 settled in Paris and gave himself up to writing. He produced many plays of great significance. These are chiefly symbolic and are possessed of great poetic and dramatic value. Among them are "La Princesse Maleine" (1889); "Pelléas and Mélisande" (1892); "Sister Beatrice" (1899); "Monna Vanna" (1902); "The Blue Bird" (1909); and "Marie Magdeleine" (1910). "The Blue Bird" became immensely popular in English translation and was played successfully throughout the United States. Maeterlinck also wrote a series of essays bearing on his philosophy of life. These include "Treasure of the Humble" (1896); "Wisdom and Destiny" (1898). "Life of the Bee," in 1902, was one of his most widely known productions. In 1913 he published "La Mort," an interpretation of his philosophy of death. In 1911 Maeterlinck was awarded the Nobel Prize for literature. During the European war he took an ac-

tive part in relief measures in Belgium and wrote much and vividly against German cruelties and misrule. In 1920 he



MAURICE MAETERLINCK

visited the United States and gave a series of lectures.

MAFIA (mä-fē'ä), **THE**, a Sicilian secret society akin to the CAMORRA (*q. v.*) in Naples. The Mafia, under one designation or another, runs back to the Middle Ages. It punished crimes against itself by death. Under the Bourbons its simplest form was brigandage and sequestration of the person, to be held to ransom, default of which implied death. When Sicily was annexed to Italy outlawry was increased by the addition of the partisans of the Bourbons, who pretended to be in insurrection. The disorders were suppressed by the bersaglieri, who scoured the country and tried by drum-head court-martial all the men they caught with arms, or who were accused of brigandage, and shot the condemned on the spot.

After the re-establishment of civil rule in the island there was a revival of the Mafia. Minor crimes are still somewhat protected by the organization, but the policy of the government has been one of steady legal pressure and change of venue to the Continent for the trial of the criminals, and this is gradually paralyzing the Mafia. This policy resulted in the emigration of large numbers of the Mafiosi to the Southern States of the United States. In New Orleans an attempt to stamp out the organization resulted in 1890 in complications between Italy and the United States. The Italian government in recent years has succeeded partially in controlling the Mafia, and its influence in the United States has ceased to become important.

MAGALLANES, the southernmost province of Chile, including all the islands located along the western and southern coasts. Most of the settlers live in Punta Arenas on the Strait of Magellan. Area 75,000 square miles; pop. 23,000.

MAGAZINES, periodical publications, usually monthly, and generally limited to fiction and articles of current interest, largely illustrated, the word meaning a "store room" of interesting literature. This form of publication had its origin as far back as 1663, when the French historian, Mézeray, attempted to establish a weekly journal of literary comment, but failed. Two years later, in 1665, the first successful magazine was established, in the "Journal des Savants," in which were reviewed new books and other matters of literary interest. In the English language Daniel Defoe, the author of "Robinson Crusoe," may properly be considered the father of the magazine, in that he instituted the practice of publishing periodical journals. The oldest of this class of works, however, is the "Gentleman's Magazine," founded in 1731, in London, by Edward Cave. In America the first magazine was published in Philadelphia, on Feb. 13, 1741, by Andrew Bradford, and edited by John Webbe. The idea, however, originated with Benjamin Franklin, who incautiously divulged his project of publishing such a periodical to Webbe. Franklin did, in fact, issue the first number of his "General Magazine" three days after the appearance of Bradford's publication, on February 16, 1741, but through Webbe's dishonorable act lost the honor of having issued the first American magazine. Webbe's publication died after its second issue, while Franklin's survived through six numbers.

Before the Revolution sixteen magazines were published in the Colonies, and forty more appeared before the close of the century, most of them failing shortly after their appearance. Of the modern magazines in this country the first was "Harper's," founded in New York in 1850. The "Atlantic Monthly" was established in Boston in 1857, and was subsequently edited by such prominent literary men as Lowell, Fields, Howells, Aldrich, and Scudder. "Scribner's" was founded in 1870, but was later merged in-

to the "Century Magazine." The appearance of "Munsey's Magazine," in 1889, introduced a new type of magazines in this country; that containing stirring fiction with a wide popular appeal, with profuse illustrations, sold at low prices, usually ten cents. The "Ladies' Home Journal," also a popular publication, is the representative type of still another class, which adds to its fiction other matters of everyday interest. It has had many imitators, some of which now approach it close as a rival in its large circulation, reaching close to two million readers.

MAGDALA (mäg-dä'lä), a hill-fortress and small town of ABYSSINIA (*q. v.*), 300 miles S. of Annesley Bay, on the Red Sea, perched on a plateau 9,110 feet above sea-level. It was the place of captivity of the British prisoners for whose rescue an expedition was sent out under Sir Robert Napier (Lord Napier of Magdala); and on April 13, 1868, the town was burned and its defenses destroyed.

MAGDALEN COLLEGE (England), a famous Oxford College founded in 1848 as St. Magdalen Hall and College of St. Mary Magdalen in 1458 by William of Wayneflete. Magdalen College, a school in connection with the college preparing for the college and university, was founded in 1480. Wayneflete established four professorships: moral and metaphysical philosophy, chemistry, physics, and pure mathematics. The college buildings, among the most beautiful in England, dating from 1475, stand among extensive grounds containing a deer park. Magdalen is rich in historic associations. The attempt of James II. to force a Roman Catholic president on the college was one of the causes for his downfall.

MAGDALENA, South America, northernmost province of Colombia, bounded by the Caribbean Sea, Venezuela, and the provinces of Santander and Bolivar. Area is 20,463 square miles, and many tropical products are grown, including coffee, sugar, cacao, hardwoods, etc. Pop. about 150,000, of which 40,000 are barbarian Indians.

MAGDALENA (mäg-dä-lā'nä), the principal river of Colombia, rising in the Central Cordillera, lat. about 2° N., and only 8 miles from the source of the Cauca. These streams flow N. on either side of the Cordillera, uniting about 130 miles from the sea. The Magdalena, which ends in a large delta, is closed to sea-going vessels by a bar with dangerous shifting sands; merchandise is conveyed by a railway (18 miles) from Barranquilla to Puerto Colombia, the shipping port, where a pier has been built. The river is navigable to Honda, 500 miles, where the rapids begin; above these it has been navigated by a German steamer to Neiva since 1875, and a railway (20 miles) alongside the rapids connects the upper and lower sections. The Magdalena's drainage area is calculated at 92,900 square miles.

MAGDALENA BAY, a seaport of Mexico, located in Lower California on the Pacific coast. It possesses one of the best natural harbors on the whole Pacific coast. A rumor that a Japanese warship had entered the harbor in 1913 with a view to securing the port for Japanese interests caused the United States Senate in 1913 to declare such an action would be a violation of the Monroe Doctrine.

MAGDALEN, or MAGDALENE, MARY, that is, Mary of Magdăla, a woman mentioned in the New Testament as having had seven devils cast out of her, as watching the crucifixion, and as having come early to the sepulcher on the resurrection morning. She was erroneously identified as the "woman who was a sinner" (Luke vii: 37), and hence the term Magdalen came to be equivalent to a penitent fallen woman.

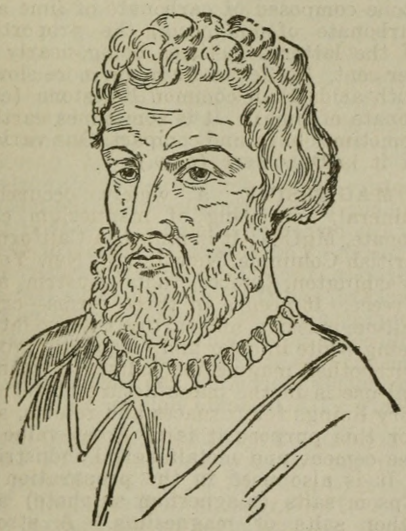
MAGDALENE COLLEGE (England), a Cambridge University college. Founded by Baron Audley of Walden, Chancellor of England, it dates from 1519, but really began its career in 1542. A Benedictine house, called Monk's Hostel, founded in 1442, first occupied the site. Buckingham College, the first educational institution erected here, was supported by property in London and the spoil of the monasteries. A peculiar feature of the foundation of Magdalene College is the appointment of the master by the owner of Audley End, seat of the founder. The college is noted for three libraries, the college library proper, the Peckard, and the Pepysian. The last occupying a separate building contains the collection of Samuel Pepys, the diarist, and the manuscript of his work, and rare documents, including the love letters of Henry VIII. to Anne Boleyn.

MAGDALEN ISLANDS, a small group near the center of the Gulf of St. Lawrence, 54 miles N. W. of Cape Breton Island. The largest is Coffin's Island. The people are supported by the lobster, cod, herring, and seal fisheries.

MAGDEBURG (mäg'de-börg), a city of Prussia, province of Saxony, on the

Elbe, 74 miles S. W. of Berlin, and 50 miles E. S. E. of Brunswick; lat. 52° 8′ N.; long. 11° 40′ E., a fortress of the first class, and from the recent improvement in its defenses one of the strongest in Europe; one of the most important commercial places of Prussia, it is divided into five parts: the Old Town, the New Market, and the Friedrichstadt, or tower fort, the New Town, and the quarter called Sudenburg. The most remarkable among its public buildings are the cathedral, containing the tomb of Otho the Great, the ducal palace, and the town hall. The citadel, on an island in the Elbe, serves also as a state prison, Baron Trenck and Lafayette having, among others, been confined in it. Manufactures considerable, consisting of silk, linen, cotton, and woolen fabrics, oil cloth, gloves, leather, tobacco, etc., with numerous tanneries, distilleries, etc. A large quantity of salt is made in the neighborhood. The transit and commission trade is very considerable. Magdeburg is a city of old date, having been mentioned as early as the reign of Charlemagne. It suffered greatly in the wars of the 16th and 17th centuries. In 1806 it was taken by the French, and was annexed to the new kingdom of Westphalia by the treaty of Tilsit in 1807. It was restored to Prussia in 1814. Pop. about 290,000.

MAGELLAN (ma-jel'an), the incorrect but generally received name of **MAGALHAËS, FERDINAND** (mä-gäl-



FERDINAND MAGELLAN

yä'ens), a celebrated Portuguese navigator; born in Saboroso, Portugal, about 1480. In 1520 he discovered and passed the straits which have since been called by his name and was the first to circumnavigate the world. His services not being valued by his own country, he offered them to Charles V. of Spain, who intrusted him with a fleet destined to attempt a W. passage to the Moluccas; hence his discovery. He was slain in a skirmish with the natives on Mactan, one of the Philippine Islands, April 27, 1521.

MAGELLAN, STRAIT OF, a sea-passage separating South America on the S. from Tierra del Fuego; length 375 miles, breadth from 2½ to 17 miles. It was discovered by Magellan in 1520, and first thoroughly explored by King and Fitzroy in the "Adventure" and "Beagle" (1826-1836). The wider E. half is bordered by level, gently-rolling grassy plains. The narrower W. half is shut in by steep, wooded mountains; the current runs strong through it, and the W. winds are a great hindrance to sailing vessels. There are several fine harbors along this part of the strait.

MAGENTA (mä-jen'tä), an Italian town, 18 miles W. of Milan. Here, on June 4, 1859, 55,000 French and Sardinians defeated 75,000 Austrians, the latter losing 10,000 (besides 7,000 prisoners), and the allies only 4,000. For this victory Macmahon received his dukedom.

MAGENTA, DUC DE. See **MACMAHON.**

MAGGIORE (mäd-jō're), **LAGO,** one of the largest lakes in Italy, the Lacus Verbanus of the Romans, situated for the most part in Italy, but also partly in the Swiss canton of Ticino; length 39 miles, breadth from ½ mile to 5½ miles; 646 feet above sea-level, with a maximum depth of 1,158 feet. The river Ticino flows through it. In a S. W. expansion of the lake are the **BORROMEAN ISLANDS** (*q. v.*). On the N. and W. it is surrounded by granitic mountains, 7,000 feet high, on the S. and E. by vineyard-covered hills.

MAGGOT, larva of an insect; a grub.

MAGI (mā'ji), a sect of priests among the ancient Medes and Persians. They formed one of the six tribes into which the Medes were originally divided, and on the downfall of the Median empire they continued to retain a great degree of power and authority with the conquerors, being the recognized ministers of the national religion. The great apostle of their religion was Zoroaster. They were so celebrated for their enchantments, that they have given name to the art of magic or enchantment. They were also learned as astrologers, and

their name was applied to anyone celebrated for wisdom; hence, the wise men of the East who came to see Jesus are simply called magi.

MAGIC, the art or pretended art of putting in action the power of spirits; the science or art of producing preternatural effects by the medium of supernatural means, or the aid of departed spirits, or the occult powers of nature. A belief in magic is to be reckoned among the earliest growths of human thought. The practice of magic had its origin in the belief in an objective connection between two things—a man and a rude drawing or image of him, or two events—as between the birth of a child and the rising or setting of a particular star, when, in truth, the connection could only be subjective.

Black magic: Magic proper, or that division of it which in former times fell into the hands of unofficial persons, or was practiced with malefic intentions. Celestial magic: A supposed supernatural power which gave to spirits a kind of dominion over the planets, and to the planets an influence over man. Natural magic: The art of applying natural causes to produce effects apparently supernatural. Superstitious or goetic magic: The invocation of devils or demons involving the supposition of some tacit or express agreement between them and human beings. White magic: (a) Magic practiced for the benefit of others. (b) The art of performing tricks and exhibiting illusions by aid of apparatus, excluding feats of dexterity in which there is no deception, together with the performance of such automaton figures as are actuated in a secret and mysterious manner.

MAGIC CIRCLE, a circle invented by Franklin, founded on the same principles and possessing similar properties with the magic square of squares.

MAGIC LANTERN, an instrument by which the images of objects, usually, but not always, transparent, and paintings or diagrams drawn on glass are exhibited, considerably magnified, on a wall or screen.

MAGIC SQUARE, a square figure formed by a series of numbers in mathematical proportion, so disposed in parallel and equal rows that the sum of the numbers in each row or line, taken perpendicularly, horizontally, or diagonally, are equal.

MAGNA CHARTA (kär'tä), or **MAGNA CARTA**, originally the Great Charter of the liberties of England and subsequently of the whole civilized world (*Magna Charta Libertatum*), signed and sealed by King John at the demand of his barons, at Runnymede, on June 15, 1215. It was several times confirmed by his successors.

MAGNA GRÆCIA (grē'shiä), or **MAJOR GRÆCIA**, in ancient history, the name applied by Greek writers to their colonies formed on the S. shores of Italy, Cumæ having by general consent the precedence in point of antiquity, though the date of its foundation 1050 B. C., is not to be relied on. There is much uncertainty as to the precise dates of the various settlements; but the greater number of them were probably made between 735 B. C. and 685 B. C.; Sybaris, 720 B. C., and Crotona, 710 B. C., the two most powerful cities, were founded by the Achæans. Tarentum, a Spartan colony, was established about 708 B. C.; Metapontum by the Achæans, 700-680 B. C.; and Locris by the Locrians, about 700 B. C.

MAGNESIA (-nē'shiä), in mineralogy, the same as periclase. Used as a drug, if administered in small doses, magnesia acts as an antacid; if in quantity beyond what is necessary to neutralize acids in the stomach, it passes undigested into the intestines, and may form concretions. The salts of magnesia are purgatives. It is given as a lithontriptic, from its power of dissolving uric acid, and in gouty diseases.

MAGNESIAN LIMESTONE, a limestone composed of carbonate of lime and carbonate of magnesia, the proportion of the latter sometimes being nearly 50 per cent. It effervesces much more slowly with acids than common limestone (carbonate of lime). It is sometimes earthy, sometimes hard and compact. One variety of it is DOLOMITE (*q. v.*).

MAGNESITE, a widely occurring mineral, consisting of magnesium carbonate, $MgCO_3$. It is mined in California, British Columbia, New Jersey, New York, Washington, Quebec, India, Austria, and Greece. It occurs in three forms—crystalline, massive, and earthy, the two latter being white in color and frequently mixed with other magnesium salts. Its principal use is in the manufacture of refractory linings for furnaces and retorts, and for this purpose it is of great value in the cement and metallurgical industries.

It is also used in the preparation of Epsom salts (magnesium sulphate) and other salts of magnesium. A strong cement is made by mixing calcined magnesite with chloride of magnesium. Other uses are in the manufacture of paper and pigments and for heat insulation.

MAGNESIUM (-nē'shium) (Latinized from Magnesia, a city in Asia Minor), in chemistry, a diatomic metallic element; symbol, Mg; at. wt. 24.4; sp. gr. 1.743. Fuses and volatilizes at a red heat. Magnesic sulphate (Epsom salts) was known in the middle of the 17th century, but the metal was first isolated by Davy. The compounds of magnesium are widely distributed in nature, occurring as magnesite, $MgO''CO$; ophite or serpentine, MgO''_3Si_2O; talc, $MgO''_4Si_5O_6$; dolomite, kainite, epsomite, etc.

MAGNETIC EQUATOR, a theoretical line drawn on the surface of the earth, connecting the points at which a dipping needle assumes a horizontal position, and at which the magnetic dip is zero.

MAGNETIC NEEDLE. See MAGNETISM.

MAGNETIC POLES. See MAGNETISM.

MAGNETISM, the science which treats of the phenomena exhibited by magnets—phenomena due to one of those forces which, like electricity and heat, are known only by their effects. The phenomena of magnetism were first observed in the loadstone or magnet (so named from Magnesia in Asia Minor). The loadstone is a kind of iron ore (magnetic iron ore), and is found in many parts of the world, especially in the Scandinavian peninsula, and in Siberia. It has the power of attracting small pieces of iron and steel, and when suspended in such a way as to be able to move freely, always points to what are called the magnetic poles of the earth, that is nearly N. and S. A piece of loadstone forms a natural magnet, and has the further remarkable power of giving all its own properties to hard iron or steel when these bodies are rubbed by it. A bar or mass of iron or steel to which the peculiar properties of a natural magnet have been imparted by friction from other magnets or by electric induction is called an artificial magnet. When freely suspended, all magnets, natural and artificial, rest with their lengths in a N. and S. direction, and this property is utilized in the well-known compass. They attract iron and other magnetic substances with a force increasing from the middle of the magnet to its extremities, which are called its poles. The magnetism at the two poles is different, that pole which points to the N. is distinguished as the north or north-seeking or austral pole, or by the sign plus (+); that which points to the S. as the south or south-seeking or boreal pole, or by the sign minus (—). The poles of the same denomination repel each other, while those of different names have mutual attraction, thus resembling the two electricities, positive and negative. The intensity of this attraction and repulsion varies inversely as the square of the distance, a law which also governs electrified bodies.

Magnetism pervades the earth as electricity does the atmosphere. It assumes a totally different form in different substances; the metals iron, nickel, and cobalt being strongly attracted by the magnet; others such as bismuth, copper, silver, gold, etc., being as strongly repelled (see DIAMAGNETIC). The space in the neighborhood of a magnet is called the magnetic field; a piece of soft iron brought into this space becomes magnetic, although it loses its magnetism as rapidly on removal from the field. (See INDUCTION.) Steel has great coercive force, in virtue of which it requires time for magnetization, and retains its magnetism on removal from the field. Hard steel may be made magnetic by rubbing it several times in the same direction with a powerful magnet, and hence it is easy to multiply magnets. The most powerful permanent magnets are produced by rubbing bars of steel on electromagnets (see ELECTRO-MAGNETISM), or by moving them backward along the axis of a coil of wire in which an electric current is passing. A bar is magnetized to saturation when its magnetism is as great as it can retain without future sensible loss.

Terrestrial magnetism, which pervades the whole earth, is extremely complicated. It becomes manifest by its influence on the magnetic needle, varying with the time and place over the earth. One pole of the needle points toward the N., the other toward the S. There are, however, only two lines on the surface of the earth on which it points directly N. and S., and where the magnetic and geographical meridians appear to coincide. Elsewhere the needle deviates more or less from the true N. This is termed the declination of the needle, and varies from place to place, and in the course of time at the same place (see ISODYNAMIC). When a needle is balanced on a horizontal axis, so that it can turn in a vertical plane, the extremity attracted by the nearer magnetic pole of the earth points more or less downward (see DIPPING NEEDLE). The angle thus made is called the dip or inclination, and the lines marking equal inclinations on a map are called isoclinal lines. They intersect the isogonal lines, and the dip increases toward the perpendicular as the magnetic poles are neared. These mag-

netic poles do not coincide with the geographical poles, the N. being 70° 5′ N., and 96° 43′ W. The S. is probably at 73½° S. and 14½° E. There are two foci of maximum force in the Northern Hemisphere and two in the Southern. In the Northern Hemisphere the stronger focus is assumed to be in 52° N. and 90° W., and the weaker in 70° N. and 115° E. In the Southern Hemisphere the stronger focus is assumed to be in 65° S. and 140° E., and the weaker probably in 50° S. and 130° W.

MAGNETITE, magnetic iron ore, also known as loadstone. It consists of black oxide of iron, $FeO.Fe_2O_3$, with small percentages of impurities. It contains approximately 72 per cent. of iron, and is widely distributed. As found, it is frequently crystalline in character with a marked metallic luster, and can readily be recognized by the fact that small fragments are picked up by a weak magnet. It is mined in the Adirondacks, in Sweden, Norway, Lapland, and the Ural Mountains.

MAGNETO. See MOTOR VEHICLE.

MAGNETOGRAPH, an instrument for recording the fluctuation of the magnetic field of the earth. The variations in strength only are recorded—the exact value at any given time is usually obtained by use of a magnetometer. The principle of operation most commonly used is the reflection of a ray of light from a mirror attached to a suspended or freely moving magnetic needle to a recording sheet of photographic paper which is attached to a drum actuated at a uniform speed by clockwork. When the instrument is to be used for recording the magnetic declination, the magnetic needle is usually suspended by a quartz fiber. When used to measure the vertical component, the needle is mounted on a knife edge so that its axis about which it may move is horizontal. Any movements of the needle, which should be of light weight in order that the inertia may be of a minimum, will cause a movement of the image reflected upon the recording paper, and a curve representing the relative changes of the magnetic is obtained.

MAGNETOMETER, an instrument for measuring any of the magnetic elements, as the dip, inclination, and intensity.

MAGNETS, this term, which was originally applied only to loadstone, or magnetite (Fe_3O_4), has come to include the various substances which have magnetic properties. A magnet in the form of a needle (compass) or bar, when so suspended that it is free to move about a vertical axis, places itself in an approximately N. and S. direction. Portions of a magnet have the property of attracting iron, nickel, cobalt, and a few other substances, while some substances are repelled. The substances which are attracted by a magnet are called magnetic substances. Those portions of the magnet which have the property of attracting or repelling are called the poles, and, in the case of a bar magnet, are usually located near the ends. Opposite magnet poles have the power of attracting each other; the like poles repel each other.

A piece of iron or steel which has been stroked laterally with a magnet becomes magnetized, and forms a typical example of ferromagnetism. If a core of iron is wound with insulated wire, and an electric current passed through the wire, the core takes on magnetic properties and becomes an electro-magnet, the direction of the electric current determining the polarity of the magnet. The latter method has by far the greater commercial application.

MAGNIFICAT, the song of the Virgin Mary, which, in the Vulgate, begins with "Magnificat." See BREVIARY.

MAGNOLIA [named after Pierre Magnol (1638-1715), Professor of Medicine at Montpellier, and author of several botanical works], the typical genus of the tribe *Magnolicæ* and the order *Magnoliaceæ*. Sepals three, deciduous; petals, six to nine; stamens and pistils many; carpels compacted in spikes or cones; seeds baccate, somewhat cordate, pendulous, with a long white umbilical thread. The species are trees or shrubs, with alternate leaves and large, terminal, odoriferous flowers. They are found in North America and Asia. *M. grandiflora*, the great-flowered magnolia, or laurel bay, is a fine evergreen tree, 70 feet high in America, and from 20 to 30 in foreign gardens. The species have large, beautiful, fragrant flowers.

MAGPIE, a well-known bird of the family *Corvidæ*. It is the *Corvus pica* of Linnæus, *Pica caudata, melanoleuca*, or *rustica* of later ornithologists. It is an extremely beautiful bird, the pure white of its scapulars and inner web of the flight feathers contrasting vividly with the deep glossy black of the body and wings, while the long tail is lustrous with green, bronze, and purple reflections.

MAGRUDER, JOHN BANKHEAD, an American military officer; born in Winchester co., Va., Aug. 15 1810. He was graduated at the United States

Military Academy; served in the Mexican War; at the outbreak of the Civil War entered the Confederate army; took part in the battle of Malvern Hill, July 1, 1862, being in command as Major-General; was appointed commander of the Department of Texas, Oct. 16, 1862; afterward served under the Emperor Maximilian, of Mexico; and died in Houston, Tex., Feb. 19, 1871.

MAGUEY, the *Agave Americana*, from which PULQUE (*q. v.*), pita flax, etc., are made.

MAGYARS. See HUNGARY.

MAHABHARATA (ma-hä-bhä'ra-ta), one of the two great epic poems of India, the other being the Ramayana. Its leading theme is the contest, perhaps, in the main, historic, between the Kurus and the Pandus, two dynasties of ancient India, both descended from Bharat, King of Hustinapoor. The discourse between Krishna and Urjoon on the eve of a battle constitutes the BHAGAVATGITA (*q. v.*). The roots of some portions of modern Hinduism are in the Mahabharata. The worship of Krishna, as one with Vishnu and the universe, has its origin here.

MAHAFFY, SIR JOHN PENTLAND, C. V. O., an Irish educator; born in Switzerland, in 1839. He was educated in Germany and at Trinity College, Dublin, being graduated in 1859, and winning a fellowship in 1864. He was made Professor of Ancient History there in 1869; was Donnellan lecturer 1873-1874. He was noted for a wide range of scholarship, and was a frequent contributor to periodicals and published books on many subjects. Among these are "Lectures on Primitive Civilization" (1868); "Prolegomena to Ancient History" (1871), treating of Egyptian antiquities; "Rambles and Studies in Greece" (1876); "History of Greek Classical Literature" (1880); "Empire of the Ptolemies" (1896); "The Silver Age of the Greek World" (1906); "What Have the Greeks Done for Civilization?" ("Lowell Lectures," 1909). He died in 1919.

MAHAN, ALFRED THAYER (ma-han'), an American naval officer and writer; born in West Point, N. Y., Sept. 27, 1840; was graduated at the United States Naval Academy, in 1859; served in the Civil War; was president of the Naval War College, Newport, in 1886-1889 and 1892-1893. He was retired at his own request Nov. 17, 1896. During the war with Spain he was a member of the Naval Board of Strategy; and in 1899 was appointed by President McKinley as one of the American delegates to the Universal Peace Conference at The Hague. His chief work "Influence of Sea Power upon History" (1890), with its continuation, "Influence of Sea Power upon the French Revolution and Empire" (1892), gave him a world-wide reputation. He published also: "The Gulf and Inland Waters" (1883); "Life of Admiral Farragut" (1892); "The Interest of America in Sea Power, Present and Future" (1897), a compilation of his magazine articles; "Life of Nelson" (1897); "Lessons of the Spanish War" (1899); "Armaments and Arbitration" (1910); "Major Operations of the Navies in the War of American Independence (1913). He died in 1914.

MAHANADI (mä-hä-nud'i) ("the great river"), a river of India, rising in the Central province, in lat. 20° 10′ N., lon. 82° E. After an E. course of 520 miles, 300 miles of which are navigable, having divided into several branches at or near the town of Cuttack, which forms the head of its delta, it flows E. and S. E. through the district of that name, and falls by several mouths into the Bay of Bengal.

MAHANOY CITY, a borough in Schuylkill co., Pa., on Mahanoy Creek and on the Lehigh Valley and the Philadelphia and Reading railroads; 13 miles N. E. of Pottsville. It contains a public library, electric lights, National banks, daily and weekly newspapers, and churches of the leading denominations. It is located in a rich anthracite coal region, from which it gains much of its prosperity. It has colleries, several potteries, iron foundries, etc. Pop. (1910) 15,936; (1920) 15,599.

MAHARAJAH (literally, a great king), a title applied in courtesy to every Indian rajah, or to any person of high rank or deemed holy.

MAHATMA (-hat'-), a word meaning "the great-souled one," and applied among the Brahmans to one who has attained the highest possible point of spiritual enlightenment. It is used as a term of respect.

MAHÉ (mä-hā'), an island in the Seychelles or Mahé Archipelago, in the Indian Ocean, about 17 miles long and 4 miles broad. Port Victoria is the capital.

MAHI KANTHA (mä'hē kän'thä) **AGENCY**, in the presidency of Bombay, India, a group of 52 native states, bounded by Udaipur on the N. and Baroda and Ahmedabad on the W.; total area, 3,125 square miles (over one

half belonging to the state of Edar or Idar); the British government assumed the management of these states in 1820. Pop. about 450,000.

MAHLER, GUSTAV, a German musical composer; born in Bohemia 1860 and died in Vienna 1911. From 1884 to 1900 he conducted orchestras in various cities of the Continent, Prague, Leipzig, and Budapest. In 1897 he became director of the Court opera at Vienna and retained this position until 1907. During the season 1907-1908 he conducted German operas at the Metropolitan Opera House, New York, and in 1909 he reorganized the New York Philharmonic Orchestra and made it one of the best in America. He achieved more success as a conductor than as a composer, and is ranked as one of the greatest masters of his profession.

MAHMUD (mä-möd'), Sultan of Ghazni, the founder of the Mohammedan empire of India; born in Ghazni, Afghanistan, about 970. His father, Sabaktagin, governor of Ghazni, owned a nominal allegiance to Persia, but was really independent. On his death Mahmud put aside his elder brother; formed an alliance against the Persian monarch, overthrew his kingdom and laid the foundation of an extensive empire in central Asia (999). He then turned his attention to India, and in a series of 12 invasions secured a great amount of treasure and vastly extended his power. He was a patron of literature, and brought many men of learning about his court, among whom was the poet Firdusi. He established large educational institutions at Ghazni, and spent vast sums on public works. He died in Ghazni in 1030.

MAHMUD, or **MOHAMMED I.**, Sultan of Turkey, son of Mustapha II.; born in Constantinople in 1696. After the deposition of his uncle, Achmet II., in 1730, he was raised, by the aid of the janissaries, to the vacant throne, on the condition that he should continue the war begun against the ruler of Persia, Nadir Shah. After a disastrous campaign a peace was concluded in 1736. Meanwhile, in 1734, the Russians had commenced hostilities against the Ottoman empire and obtained several successes; their Austrian allies at the same time invading the Turkish province of Wallachia. The latter, however, being badly defeated by the Moslems at Krotska, on the Danube, in 1739, were forced to make peace and also surrender Belgrade. The Russians also effected a treaty, but one more advantageous, they retaining their previous conquests. In 1743 renewed hostilities broke out between Persia and Turkey, in which the latter power was the sufferer. Mahmud died in 1754.

MAHMUD II., Sultan of Turkey; born July 20, 1785. He succeeded his brother Mustapha IV. in 1808, and shortly afterward, during an insurrection among the janissaries, caused the former monarch and his infant to be put to death. The janissaries, however, getting the upper hand, obliged Mahmud to submit to their demands. He continued to carry on the war with Russia and Serbia till 1812, when a treaty of peace was effected, by which the Pruth was made the boundary of the two empires. This able ruler next successively crushed the Arabian Wahabees, and the revolt of ALI PASHA in 1822. A rebellion of his Greek subjects, in 1821, was put down with such relentless severity that Great Britain, France, and Russia found it their duty to interfere, when, mediation proving unavailing, their united squadrons annihilated the Turkish fleet at Navarino in 1827. In 1832 Mahmud, endeavoring to drive the rebellious MEHEMET ALI (*q. v.*) out of Syria, was defeated by Ibrahim Pasha, son of the latter. In 1839 a second attempt to reduce his formidable vassal again subjected the Turkish arms to defeat by Ibrahim. He died July 1, 1839.

MAHOGANY (from *mahogoni*, its Central American name), the timber of *Swietenia mahogoni*. It is close-grained and hard, susceptible of a fine polish, and is largely used for the manufacture of household furniture. It is fragrant and aromatic, and is considered febrifugal. Mahogany is said to have been first brought to England by Sir Walter Raleigh in 1595, but not to have come into general use till about 1720.

MAHOGANY TREE, *Swietenia mahogoni*, one of the *Cedrelaceæ*. It is a lofty, branching tree, with a large, handsome head, flowers like those of Melia, and fruits about the size of a turkey's egg. It grows in the warmest parts of Central America, in Cuba, Jamaica, Hispaniola, and the Bahamas.

MAHOMET. See MOHAMMED.

MAHONY, FRANCIS (ma-hō'ni), known as FATHER PROUT, an Irish Journalist and poet; born in Cork, Ireland, in 1804. He was educated at a Jesuit seminary at Amiens, studied theology at Paris, received clerical ordination, and officiated for a short time at the chapel of the Bavarian Legation, London. About 1834 he began the contribution of an

amusing series of articles known as the "Prout Papers" to "Fraser's Magazine." For the last 12 or 15 years of his life he was Paris correspondent for the "Globe." "Reliques of Father Prout" was published in 1836 and 1860, and "Final Reliques" in 1876. He died in Paris, France, May 18, 1866.

MAHRATTAS, MARÁTHÁS, or MARHATAS (ma-rat'äz), a people of mixed origin, Hindus in religion and caste ordinances, inhabiting western and central India, from the Satpura Mountains to Nagpur. The Mahratta Brahmans claim to be Rajputs; the bulk of the people are Sudras, and probably of aboriginal blood mainly. They are first mentioned in history about the middle of the 17th century, when they possessed a narrow strip of territory on the W. side of the peninsula. The founder of the Mahratta power was Sivají, a freebooter or adventurer, whose father Shahji Bhonsla, was an officer in the service of the last King of Bijapúr. His son and (1680) successor, Sambhaji, after vigorously following out his father's policy, was taken prisoner by Aurungzebe in 1689, and put to death. His son, a prisoner, resigned his rule with the title of Peshwá; the descendants of Sivají henceforward reigned over but did not govern Sattara.

Under the fourth hereditary Peshwá there were five Mahratta states, more or less powerful and independent. They wrested additional territory from the feeble grasp of the Mogul emperor; but the frightful defeat (in January, 1761) they sustained at the hands of Ahmed Shah Duráni, the ruler of Afghanistan, on the field of Panipat, weakened their power for a time. They still, however, continued to be the hired mercenaries of the Delhi emperor, till the growing influence of the British compelled them to look to their own safety.

After many long and bloody contests with the British and their allies they were one by one, with the exception of Sindhia, reduced to a state of dependence. This last-mentioned chief continued the contest for a number of years till his power was finally broken in 1843. The Mahratta states of Indore, Gwalior, and Baroda refrained from participation in the Sepoy Mutiny of 1857. The dignity of Peshwá was abolished in 1818, and his territories were occupied by the British.

MAIDENHAIR, *Adiantum capillus veneris*, and the genus *Adiantum*. The former has many spreading capillary branches (whence the English name), a three to four pinnate frond, with the pinnules cuneate, lobed, crenate, glabrous. It is rare in Great Britain, but is found in the United States, in continental Europe, Asia, Africa, and Polynesia. Also *Passiflora adiantum*.

MAIDENHAIR TREE, the *Salisburia adiantifolia*, a deciduous tree of the yew family, a native of Japan, so called from the likeness of its leaves to the maidenhair fern.

MAIDENHEAD, a municipal borough and market-town of Berkshire, England, situated amid beautiful scenery 26 miles W. of London, on the right bank of the Thames (over which are two bridges, one of stone, built in 1772 at a cost of $100,000, and the other of brick) and on the Great Western railway. In 1399 it was the scene of an engagement between the rival forces of Richard II. and Henry IV., and in 1647, at the Greyhound Inn, of the interview of Charles I. with his children. Pop. about 16,000.

MAIDEN PLUM, the name of two West Indian plants, *Comocladia integrifolia* and *C. dentata*, belonging to the natural order *Anacardiaceæ*. They yield a milky juice which, on exposure to air, becomes an indelible black dye.

MAIKOP, Caucasia, a town 93 miles S. E. of Ekaterinodar, situated on a branch of the main railroad line to Baku. The region round about is rich in oil wells, whose products are shipped through Maikop. Pop. about 45,000.

MAILS. See POSTAL SERVICE.

MAIMONIDES, MOSES (mī-mon'i-dēz), a Jewish philosopher; born in Cordova, Spain, March 30, 1135. He harmonized Judaism and philosophy. Driven with his family from Spain, he resided in Fez; then traveled by way of Palestine to Cairo, becoming there chief rabbi and the caliph's physician. His chief work, written in Hebrew, is "Mishneh Torah" (Repetition of the Law: 1170-1180), a masterly exposition of the whole of the Jewish law as contained in the Pentateuch and the voluminous Talmudic literature. His principal philosophical work, written in Arabic, was "Dalalt al Haïrin" (Guide of the Perplexed: 1190). He died in Cairo, Egypt, Dec. 13, 1204.

MAIN (mīn), a river of Germany; rises in the Fichtelgebirge; flows in a generally W. direction for a distance of 300 miles; and joins the Rhine a little above the town of Mainz. It is navigable for about 200 miles, and has been improved so as to admit the largest Rhine steamers to Frankfort. By means of King Ludwig canal it affords through navigation to the Danube.



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MAINE, a State of the North Atlantic Division of the North American Union; bounded by Quebec, New Brunswick, the Atlantic Ocean, Bay of Fundy, and New Hampshire; admitted to the Union, March 15, 1820; counties, 16; area, 29,395 square miles; pop. (1890) 661,086; (1900) 694,466; (1910) 742,371; (1920) 768,014; capital, Augusta.

Topography.—The surface of the State is as a rule hilly and mountainous, excepting along the coast, where it is flat and sometimes marshy. The main mountain system crosses the State in a N. E. direction from the White Mountains, past Mount Katahdin and Mount Abraham to Mars Hill near St. John river. The highest elevation is Mount Katahdin, in the center of the State, 5,383 feet. The coast line is very irregular, and, with its numerous indentations, presents a length of over 2,000 miles. The sea coast E. of the Kennebec rises abruptly to a height of from 1,000 to 2,800 feet, while the W. portion consists of swamps and sand flats, extending 10 to 20 miles inland. The rivers rise in the mountains at the N. of the State and in Canada and New Hampshire, and flow rapidly and with numerous falls and rapids to the sea, affording excellent water power. The principal ones are the St. John, forming most of the Canadian boundary; the Penobscot, Kennebec and Androscoggin, rising in the N. and central portions of the State, and flowing into the Atlantic. Maine has over 1,500 lakes. Moosehead Lake, the largest, is 35 miles long, 10 miles wide, and 1,023 feet above sea-level. Rangeley and Richardson Lakes, in the E., have an altitude of 1,500 feet.

Geology.—The rocks of Maine are largely of igneous and palæozoic origin. The Upper Silurian limestones appear in the N. W., and fossiliferous limestone and argillaceous schists of the Lower Silurian are found in the central portion of the State. The old red sandstone appears in the N., and strata of post-Tertiary, Miocene, and Pliocene formations exist in the S. E. Much of the sea-coast formations are of recent origin.

Mineralogy.—The State abounds in minerals of many kinds, some of them rare, but the chief production is in stone products, especially of granite. The annual production of granite is valued at nearly $2,000,000. Clay products to the value of $1,000,000 are produced. The total mineral production is valued at about $5,000,000 per year.

Soil.—The State presents a great variety of soil. That on the sea-coast and mountain lands is sterile and does not repay cultivation. The soil in the river valleys between the Penobscot and Kennebec is of alluvial formation and exceedingly valuable for cereals. The great valley of the Aroostook contains the most fertile lands E. of the Mississippi valley, producing excellent wheat, potatoes, barley, rye and other grains in great abundance. The upland is the best for grazing and the clay loam for hay. The forests of the State are of great value. In the N. the trees are principally pine, fir, spruce, hemlock, and other evergreens, with cedars in the N. E. In the central portion of the State the white and red oak, maple, beech, birch, and ash are abundant, while further S. the poplar, elm, basswood, dogwood, sassafras, juniper, butterwood, butternut, chestnut, alder, and willow abound.

Agriculture.—Maine has agricultural interests of great importance. The N. E. part, embracing Aroostook county, produces the largest and best potato crops in the world. The potatoes are used largely for seed in other parts of the United States and foreign countries. Garden fruits and vegetables are also produced in large quantities. The principal farm crops in 1919, with their value, was as follows: Corn, 1,100,000 bushels, valued at $2,145,000; oats, 5,746,000 bushels, valued at $5,286,000; wheat, 228,000 bushels, valued at $502,000; hay, 1,146,000 tons, valued at $27,227,000; potatoes, 24,480,000 bushels, valued at $34,272,000.

The live stock statistics are as follows: Horses, about 115,000, valued at $17,000,000; milch cows, about 160,000, valued at about $9,000,000; other cattle, about 100,000, valued at about $2,600,000; sheep, about 165,000, valued at about $800,000; swine, about 100,000, valued at about $1,500,000. About 1,000,000 pounds of wool are produced annually in the State. Maine ranks second among the New England States in the value of its fisheries.

Manufactures.—Maine is an important manufacturing State. It has excellent water power, and this is used to develop power for many large textile, paper, and other mills. In 1914 there were 5,378 manufacturing establishments, employing 82,140 wage earners. The capital invested was $233,844,000; the amount paid in wages, $43,254,000; the value of the materials used was $117,655,000; and the value of the completed products was $200,450,000.

Banking.—On Oct. 31, 1919, there were 64 National banks in operation, having $6,915,000 in capital; $5,846,506 in outstanding circulation and $5,355,750 in

United States bonds. There were also 44 mutual and stock savings banks with $97,253,000 in deposits; and 53 trust and loan associations, with $4,599,000 capital. The exchanges at the United States clearing house at Portland during the year ending Sept. 30, 1919, aggregated $129,199,000.

Education.—The school population of the State in 1919 was 228,489. The average daily attendance in elementary schools was 97,638; in secondary schools, 15,247. The total school enrollment in elementary schools was 131,313; in secondary schools, 17,956. There were 4,848 teachers in the elementary schools and 849 in the secondary schools. The average yearly salary in the elementary schools was $462.46, and in the secondary schools, $857.73. The total expenditure in 1919 for elementary schools was $3,892,279, and for secondary schools $1,257,114. The State is well supplied with public high schools and private schools. There are four colleges: Bowdoin College at Brunswick, Bates College at Lewiston, University of Maine at Orono, and Colby College at Waterville.

Churches.—The strongest denominations in the State are the Roman Catholic, Congregational, Methodist Episcopal, Regular Baptist, Freewill Baptist, Advent Christians, Protestant Episcopal, and Universalist.

Finance.—The total expenditures for the year ending Jan. 1, 1919, amounted to $8,199,235, and the receipts to $8,323,521. There was a balance on hand at that date of $1,986,494. The trust funds of the State amount to about $1,600,000.

Transportation.—The total railway mileage in the State in 1919 was 2,304 miles. The Maine Central and the Bangor and Aroostook railroads have the longest mileage. The former is 995 miles long and the latter 630 miles. The Canadian Pacific railroad has 177 miles of track within the State, and the Boston and Maine about 140 miles.

Charities and Corrections.—There are State hospitals at Augusta and Bangor, the Maine School for Feeble-minded, and the Bath Military and Naval Asylum, located at Bath. In addition to these are the Maine Industrial School for Girls at Hallowell, the State School for Boys at South Portland, and the Maine State Prison at Thomaston.

State Government.—The governor is elected for a term of two years and receives a salary of $5,000 per annum. Legislative sessions are held biennially, beginning on the first Wednesday in January, and have no time limit. The Legislature has 31 members in the Senate and 151 in the House. There are four representatives in Congress. The State government in 1920 was Republican.

History.—The first attempt to settle on the territory was made by the French under De Monts, who, having received a patent from the French king, planted a large colony on Neutral Island in the St. Croix river. In 1613, French Jesuits established a mission on Mount Desert Island, which was expelled by the English the next year. In 1616, Sir Ferdinando Gorges, a leading promoter of colonization in Maine, sent his agent, Richard Vines, with a small company to Saco to remain during the winter, explore the country, and test the climate. Capt. John Smith visited and explored the coast in 1614, examining it as far S. as Cape Cod. In 1620 the King of Great Britain made a division of the grand charter of 1606, and granted to the Plymouth Company in England the whole country lying between lat. 40° and 48° N., and to the Virginia Company the S. portion of the original patent. From 1630 to 1632 settlements were commenced in Saco, Biddeford, Scarboro, Cape Elizabeth, and Portland, all of which continued to prosper till the Indian War of 1625, when they were all overthrown. The territory between the Kennebec and Penobscot rivers was granted by Charles II., in 1664, to his brother, the Duke of York, who had the year before established a seat of government there at the city of Pemaquid, where a strong fort was built. This country was surrendered to Massachusetts in 1686, which took possession, exercised government over it as far E. as Penobscot, which, with all the territory E. to the St. Croix and Nova Scotia, was confirmed to her by the provisional charter of 1691. She afterward relinquished Nova Scotia, but all the remainder was secured to her by the treaty of 1783, which established the independence of the United States, and she retained possession and jurisdiction till the separation of 1820 took place, which constituted Maine a separate and independent member of the Federal Union.

MAINE (mān), an old province of France, having Normandy on the N., Brittany on the W., and Anjou on the S., corresponding to the modern department of Sarthe and Mayenne; its chief town was Le Mans.

MAINE, UNIVERSITY OF, a coeducational non-sectarian institution in Orono, Me.; founded in 1865; reported at the close of 1919: Professors and

instructors, 160; students, 1,213; volumes in library, 66,000; funds from the State amounted to $199,986; from the Federal Government, $99,909; from trust funds, $4,000; president, Robert Judson Aley, Sc. D.

MAINE-ET-LOIRE (-ā-lwär'), a department of France, formed out of the old province of Anjou, and watered by the rivers whose names it bears, divided into the arrondissements of Angers, Beaugé, Cholet, Saumur, and Segré; area, 2,787 square miles; pop. about 510,000; the soil is fertile, and produces excellent corn and wine, with hemp, linseed, fruit and green crops; slate quarries and coal mines are worked, and there are mills for cotton, woolen, and linen manufacturers. Capital, Angers. The department is formed mainly out of the ancient Anjou.

MAINTENON (m*a*ng*t*-nôn*g*), **FRANÇOISE D'AUBIGNÉ, MARCHIONESS DE**, the second wife of Louis XIV.; born in the prison of Niort, France, Nov. 27, 1635, where her parents were held. On their release they removed to Martinique. After her father's death she was brought up by her aunt, Madame Villette, in the Protestant faith, from which, owing to the interference of her mother, a strict Catholic, she was afterward converted. Subsequently, being left in very reduced circumstances, she married the celebrated poet and novelist Scarron. On his death she became governess of the children of Madame de Montespan. This connection brought her under the notice of the monarch, and in 1679 he changed her name to Maintenon, giving her an estate with that title. She supplanted Montespan and La Chaise, his confessor, having advised the king to sanction his wishes by a secret but formal marriage, it was solemnized in 1685. After her elevation, she lived in a sort of retirement from the world. Louis visited her several times a day, and transacted business with his ministers in her apartments, while she read or otherwise employed herself. Having founded the school of St. Cyr, for the education of poor girls of good family, she retired to it after the death of the king, and there passed the remainder of her life. She died, generally respected, April 15, 1719. Her "Memoirs" and "Correspondence" have been published.

MAINZ (mīnts) (French, Mayence), a fortified town of Germany, in the republic of Hesse, finely situated on the left bank of the Rhine, opposite the mouth of the Main, 20 miles W. S. W. of Frankfort. The Rhine is here crossed by a bridge connecting Mainz with the small town of Castel, which is within the system of fortifications; there is also a railway bridge. The older part of the town has been mostly modernized since the destruction caused by a powder magazine explosion in 1857, and an extensive new quarter has been added since the recent widening of the fortified circuit. Among the more interesting buildings are the cathedral, a vast building of red sandstone, finished in the 14th century, adorned with several finely painted windows, frescoes, and a great number of ancient and curious monuments; the former electoral palace, now containing the City Library (over 230,000 vols.), picture gallery, museum, etc.; the old collegiate church of St. Stephen, a fine specimen of Gothic architecture; the grand-ducal castle; the courts of justice; the government buildings; the town hall, a new Renaissance structure; the theater, central railway station, Gutenberg's house and other buildings associated with the invention of printing, etc., There is a fine statue of Gutenberg by Thorwaldsen. The handsome quay, about 330 feet in breadth, along the Rhine, affords a pleasant promenade; and there are several docks. The manufactures embrace leather, furniture, hardware, carriages, tobacco, beer, chemicals, musical instruments, etc. The trade, particularly transit, is extensive. Mainz was for long the first ecclesiastical city of the German empire, of which its archbishop-elector ranked as the premier prince. Its history during the 16th century is of considerable interest in connection with the progress of the Reformation. Pop. about 120,000.

MAISONNEUVE, a city, near Montreal, Canada, of which it is a suburb. Its manufacturing plants employ nearly half the population, and turn out cotton goods, shoes, sugar, and foundry products. Has a fine city hall, libraries and schools. Its industrial output ranks as sixth in Canada. Pop. about 40,000.

MAITLAND, Australia, a town in New South Wales, on the Hunter river, 119 miles N. of Sydney and 15 miles N. W. of Newcastle. Some of the purest coal in the world is found in this region, veins running over thirty feet in thickness, but these fields have not yet been much exploited. Pop. about 12,000.

MAITLAND, WILLIAM, commonly known as SECRETARY LETHINGTON, a Scotch statesman, eldest son of Sir Richard Maitland; born about 1525. He early adopted the reformed doctrines, and was one of the first public men openly to renounce the mass. In 1558 he was ap-

pointed secretary of state by Mary of Guise. In the following year he joined the Lords of the Congregation, who had taken possession of Edinburgh. In 1560 he was speaker of the Parliament which abolished the authority of the Pope in Scotland. On Queen Mary's arrival in Scotland he was chosen one of her principal ministers, and was continually employed as her envoy to the English court. After the assassination of Moray he became the life and soul of the queen's party and kept up an active correspondence with Mary, who was then in prison. In 1571 he joined Kirkcaldy in Edinburgh Castle; was proclaimed a traitor by the Parliament, and attainted with his two brothers. On the surrender of Edinburgh Castle Kirkcaldy and his brother were hanged, but Maitland died in prison in Leith, presumably by his own hand, June 9, 1573.

MAIZE (a word of Haitian origin), the *Zea mays*, a cereal grass of the tribe Phalareæ. The leaves are broad, and hang down from the tops of sheaths. The flowers are monœcious. The males are in loose, terminal, compound racemes; the females in many rows on a spike, enveloped in bracts. Each grain is surmounted by a thread-like style, giving the spike a silky aspect. The seeds, when ripe, are compactly arranged in rows on a rachis. They are flattened at the apex, and may be pale-yellow, white, variegated, blood-red, or purple. The seeds are very firm, the outer part being horny and the central mass more or less brittle and soft.

MAIZE. See CORN, INDIAN.

MAIZE OIL (Corn oil), a pale yellow oil, specific gravity 0.926, pressed from the germ of maize. The germs are obtained as a by-product in the manufacture of starch and are separated from the starch granules by sifting or blowing. The germs contain approximately 50 per cent. of oil, and yield, by pressing, about 40 per cent. Before being placed on the market the oil is neutralized and partially decolorized, and is then used for cooking, as a salad oil, and in the manufacture of oleomargarine. Lower grades of oil are used in the manufacture of soap.

MAJESTY, a title of honor now usually bestowed on sovereigns.

MAJOLICA (mā-yol'i-kä) (from the Italian name of the island of MAJORCA (*q. v.*), where this ware seems to have been first made), a decorated kind of enameled pottery made in Italy from the 15th to the 18th century. It attained its greatest development in the duchy of Urbino, which included the four great manufactories of Pesaro, Gubbio, Urbino, and Castel Durante. Majolica is an earthenware usually of a coarse paste, covered with a stanniferous glaze or enamel.

MAJOR, in the army, a field officer next in rank above a captain and below a lieutenant-colonel. His duties are to superintend the exercises of the regiment or battalion, to carry out the orders of his superior officers, and to command in the absence of the lieutenant-colonel, and colonel.

MAJOR, in music, greater. A major third consists of four semitones, a minor third of three. A major tone is the whole tone having the ratio 8.9; a minor tone, that having the ratio 9.10. Intervals have had the term major applied to them in a conflicting manner.

MAJORCA (ma-jôr'kä), or **MALLORCA** (mäl-yor'-), the largest of the BALEARIC ISLES (*q. v.*), lying about 100 miles from the Spanish coast, and 150 N. of Algiers; length, 60 miles; breadth, 40 miles; area, 1,352 square miles; pop. about 280,000. The climate is healthful, the sea breeze preserving a nearly equable temperature over the whole island. In the N. there are mountains reaching 3,500 to 5,000 feet in height. The hillsides are terraced; olive groves abound everywhere, and almond, orange, fig, and other fruit trees are common. The vine is grown and good wine made. The soil is extraordinarily fertile. There are manufactories of cloth, cotton goods, ropes, silk, soap, shoes, etc.; there are railways connecting the capital, PALMA (*q. v.*); pop. (1920) about 65,000, with Manacor (20,000), the second town of the island (where as well as at Arta there are magnificent caves), and La Puebla (5,000). Large quantities of the lustered ware called MAJOLICA (*q. v.*) were exported to Italy and elsewhere in the 15th century; this ware is still made to a small extent.

MAJOR-GENERAL, that title in the United States army which ranks below a general and a lieutenant-general, and above a brigadier-general. For some years prior to the World War it was the highest rank held by any officer in the service. A major-general commands a division, or, in time of peace, a territorial department.

MAJOR GRÆCIA. See MAGNA GRÆCIA.

MAJUBA (mä-jö'bä) **HILL**, an eminence in the extreme N. of Natal, the scene of the defeat of 648 British troops, with the loss of their leader, Sir George

Colley, by a greatly superior force of Transvaal Boers, Feb. 27, 1881.

MAKART, HANS (mäk'ärt), an Austrian painter; born in Salzburg, Austria, May 28, 1840; studied at Vienna and at Munich, where he became the best pupil of Piloty; visited Italy in 1869, and Egypt in 1876. His large picture, "Venice Doing Homage to Catharine Cornaro," was exhibited at the Centennial Exhibition in Philadelphia, in 1876. Among his other works are "Roman Ruins," "The Plague at Florence," "Cleopatra," "Entrance of Charles V. into Antwerp." He also painted many scenes from Shakespeare. He died in Vienna, Oct. 3, 1884.

MAKO, a town of Hungary on the right bank of the Maros, 19 miles E. of Szegedin. It is the center of an important stock-raising and agricultural region. Pop. about 35,000.

MALABAR (mal-a-bär'), a district on the S. W. coast of India, in the presidency of Madras, extending from lat. 10° 15′ to 12° 18′ N.; area, 5,765 square miles; pop. about 3,000,000, over two-thirds Hindus, and one-fourth Mohammedans. The surface is occupied in the E. by the western Ghâts, which send down numerous rivers to the coast, many of them navigable for some distance. There are large forests. Rice is the staple crop; cocoanuts are largely grown, and also coffee and pepper. The name of this district is applied to the whole S. W. coast of southern India.

MALABAR LEAF, the leaf of the *Cinnamomum malabathrum* of Malabar, formerly used in European medicine.

MALACCA, or MALAY PENINSULA. See STRAITS SETTLEMENTS.

MALACCA, STRAIT OF, a channel separating the Malay Peninsula on the N. E. from the island of Sumatra on the S. W., and connecting the Indian Ocean with the Chinese Sea; length, 480 miles; breadth, from 30 miles at the S. E. to 115 miles at the N. W. extremity. On this strait are the British settlements of Malacca, Penang, etc.

MALACCA BEAN, the fruit of the *Semecorpus Anacardium*, or marking nut tree of India, belonging to the natural order *Anacordiaceæ*. It closely resembles the cashew nut.

MALACHI (mal'a-kī), the last of the Old Testament minor prophets. Of his history nothing is certainly known.

The Prophecies of Malachi, the last prophetic book of the Old Testament. When it was penned, the Jewish people were under a governor instead of a king (i: 8), and the Temple was rebuilt (i: 7, 10, iii: 1, 10). The governor was probably Nehemiah, during his second visit to Jerusalem. If so, then, Malachi prophesied probably between 430 and 425 B. C., during the first part of the Peloponnesian war, and was a contemporary of Sophocles (496-405); Euripides (480-406), Herodotus (484-424), and Thucydides (471-396).

MALACHITE (-kīt), a monoclinic green mineral rarely found in crystals, but mostly as fibrous or compact stalagmitic masses.

MALACHY (mal'a-kī), **ST.**, an Irish prelate, Archbishop of Armagh, and the greatest of St. Patrick's successors; born in Armagh, Ireland, about 1095. In 1121 he became Abbot of Bangor. Archbishop Celsus, who had made him his vicar, procured his election to the see of Connor (1125), and on his deathbed (1129) recommended him as his successor in the primacy. It was not, however, till 1134 that Malachy could establish himself therein. In 1140 he journeyed to Rome, seeking the pallium, and Innocent II. appointed him papal legate for Ireland. In 1148 he once more repaired to France, to renew to Eugenius III. his request for the pallium; but before his arrival the Pope had gone back to Rome, and at Clairvaux, on Nov. 1, Malachy died of a fever in St. Bernard's arms. He was canonized by Clement IV. The curious "Prophecy of St. Malachy" were first published in his "Wood of Life" (Venice, 1595).

MALACOLOGY, the science which treats of the mollusca, or soft-bodied animals.

MALAGA, a seaport-town of Spain, capital of the province of the same name, situated on the Mediterranean, 68 miles N. E. of Gibraltar, and 254 S. W. of Madrid; lat. 36° 43′ 5″ N., lon. 4° 26′ W.; is commanded by an old Moorish fortress, called the Gibralfaro, and is of circular form, surrounded by a double wall, with a number of stately towers; the city is of Moorish construction, the streets narrow, the houses large, and, in general, each has a court into which the windows open; the public buildings are obscured by private houses, and the city does not even contain a good square. The harbor of Malaga is capable of containing about 450 merchant vessels. A fine mole, of 700 yards in length, runs out into the sea, and two smaller ones have been subsequently built. The rivers Guadalmedina and Guadaljorce discharge their waters at this place into the ocean.

The chief exports are fruit and wine. Manufactures linens, woolens, sailcloth, paper, rope, hats, leather, and soap. Malaga was founded by the Phœnicians. It fell into the hands of the Moors in 714, and was not wrested from them till 1487, when Ferdinand the Catholic took it. In 1810 it was taken by the French, and remained in their possession till the year 1812. Pop. about 140,000.

MALAGA WINE, a sweet Spanish wine produced in the province of Malaga. It is one of the "muscatel" wines, and is rich, luscious, and full of body.

MALARIA, a morbid poison formerly believed to be due to emanations generated by the decomposition of animal or vegetable matter under certain conditions of heat and moisture. Modern investigation has proved the disease to be caused by the bite of the MOSQUITO (*q. v.*).

MALARIAL FEVER, a fever produced by MALARIA (*q. v.*). There are several forms of this disease, all produced by the same poison and all influenced by the same line of treatment, especially by the more marked antiperiodic remedies, particularly quinine. The principal forms of malarial fever are intermittent (commonly called ague, chills and fever, etc.), remittent or bilious, congestive, and a few complicated forms, wrongly designated typho-malarial, hæmorrhagic-malarial, etc., all being only aggravations of the usual form of malarial fever.

MALATESTA, a distinguished Italian family the chief branch of which were lords of Rimini from 1295 to 1526, and celebrated for the active share they took in the stirring events of that period.

MALATIA (mä-lä-tē'ä), a town in the N. W. of the province of Diarbekir in Asia Minor, 8 miles from the Euphrates, and on an important trade route. It was the Melitene of ancient Cappadocia, and was long the headquarters of the Jacobite Christians. Pop. about 30,000.

MALAYAN BEAR, *Helarctos* (*Ursus*) *malayanus*, a bear found in the Malayan Archipelago, Borneo, Sumatra, and Java. It is about 4½ feet in length; the fur is black, fading into brown on the nose. The chest bears a crescentic white mark; the Bornean variety has an orange-colored, heart-shaped patch. It usually feeds on grains and fruits, and is very fond of honey. It occasionally indulges in animal food; and attacks man when there is no means of escape.

MALAY ARCHIPELAGO, INDIAN ARCHIPELAGO, or **EASTERN ARCHIPELAGO**, the great group of islands situated to the S. E. of Asia, and washed on the W. by the Indian and E. by the Pacific Ocean; may roughly be said to lie between the meridians of 95° and 135° E., and the parallels of 11° S. and 17° N. Within these limits lie some of the largest and finest islands in the world, as Borneo, Sumatra, Java, Celebes, the Philippines, etc., but New Guinea is not ranked as belonging to the group. The chief of the smaller islands are the Moluccas or Spice Islands, Billiton, Banca, Madura, Bali, Lombok, Sumbawa, Flores, Timor. The small islands may be truly called innumerable. The islands are generally fertile and covered with a luxuriant vegetation, and they produce all kinds of tropical products in abundance. Many of them contain volcanoes. As regards their fauna and flora, they may be divided into two main groups, those E. of the Strait of Macassar and the channel between Bali and Lombok having more affinities with Australia, while the others are rather Asiatic in character. The chief native race is the Malayan. A large portion of the archipelago is really or nominally under the sway of Holland, and this portion is frequently called the Dutch East Indies.

MALAY PENINSULA. See STRAITS SETTLEMENTS.

MALAYS, a people inhabiting the Malay Peninsula and the Eastern or Malay Archipelago, or collectively Malaysia. They are of Mongolian affinity, and may be looked on as an oceanic branch of that division of mankind, being modified physically by mingling with the Papuan element in the E. and the Caucasian element in the central and W. parts of the archipelago. This enterprising race has made its way widely over the Pacific islands, reaching as far S. as Madagascar, where they exist as the dominant Hova element of the population. This widespread dominion is due to their bold, enterprising, and roving disposition, their place of residence on the peninsula and the larger islands being the coast region, whence they have driven the natives into the interior and where they long pursued a piratical career, darting from hidden streams in their well-manned proas on any vessel that approached too near the coast, or more boldly lying in wait in fleets in the open sea for any expected rich prize. Physically considered, the Malays are of low stature, slight in figure, and with very small wrists and ankles. The face is round, the eyes black and somewhat almond-shaped, the nose short and small, cheek bones prominent, features flat, the hair straight and black, the complexion

yellowish. In various respects they bear a close resemblance to the Mongolians of Eastern Asia, but differ from them radically in language, all their dialects belonging to a distinct Malayo-Polynesian family which is widely distributed throughout the Indian and Pacific oceans. Of late years the lessons taught them by European naval vessels have forced the Malays to desist from piracy, their old lawless, roving habits being largely abandoned for the more settled occupations of trade and agriculture, though the old spirit occasionally shows itself in outbreaks of murderous frenzy, known as "running amuck." Intellectually they seem at a low level, and have never developed a native literature, such civilization as they possess being due to Arab and Hindu influence. Under these incitements they have developed considerable poetic and dramatic literature, and historical and other prose writings.

MALCOLM, the name of various Scotch rulers, as follows: MALCOLM I., King of Scotland; reigned from 943 to 954. MALCOLM II. succeeded Kenneth II. in 1005. In his reign Lothian and Strathclyde became parts of the Scottish kingdom. He was assassinated at Glams in 1034. He was the last direct male descendant of Kenneth MacAlpine. MALCOLM III., surnamed CANMORE (Great Head); born about 1024. After the murder of his father, Duncan, by Macbeth, he sought aid from Siward of Northumbria, and his cause was also espoused by Edward the Confessor. On the defeat and death of Macbeth he was crowned at Scone in 1058. In 1068 he granted asylum to Edgar Atheling, his mother, and two sisters (one of whom, Margaret, he married in 1070), with a number of Saxon exiles. His reign, which was mostly taken up with wars with England, had nevertheless an important bearing on the civilization and consolidation of Scotland. MALCOLM IV. (the Maiden) succeeded his grandfather, David I., in 1153. He surrendered Northumberland and Cumberland to Henry II. in 1157. Died in Jedburgh in 1165, at the age of 24.

MALDEN, a city in Middlesex co., Mass.; on the Malden river and on the Boston and Maine railroad; 5 miles N. of Boston. It contains Converse Memorial Hall, Art Gallery and Library, hospital, electric light plant, waterworks, daily and weekly newspapers, and National banks. The city is the trade center for surrounding towns. It has about 300 manufacturing establishments, including one of the largest boot, shoe, and rubber works in the United States, and sand and emery paper, card and tassel, last and boot-tree, leather factories, etc. Pop. (1910) 44,404; (1920) 49,103.

MALDIVE ISLANDS, a chain of 17 coral islets (atolls) in the Indian Ocean, about 300 miles from the S. E. coast of Hindustan, and 500 miles W. of Ceylon; lat. 0° 45′ and 7° 6′ N., lon. 72° 48′ and 73° 48′ E.; pop., estimated, about 50,000. They are divided into groups, separated by narrow channels, which form safe harbors for small vessels. They are seldom visited by Europeans, the climate being intensely hot and unhealthy. Products, millet, fruit, and poultry. The islands carry on a considerable trade with each other, and also with Hindustan and Sumatra. The principal island is Mali. It is the residence of the Sultan, who pays an annual tribute to the British government at Ceylon.

MALDONADO, naval station of Uruguay, on the Plata estuary, 60 miles E. of Montevideo. Has fortifications, with notable civic buildings, grouped round large square. Pop. 5,000.

MALESHERBES, CHRÉTIEN GUILLAUME DE LAMOIGNON DE (mälzārb′), a French statesman; born in Paris, France, Dec. 6, 1721. He succeeded his father as president of the Court of Aids, besides which he had the superintendence of the press. His faithful service and adherence to Louis XVI. excited the jealousy of the French rulers, and caused his destruction. Almost his whole family were extirpated by the merciless proscription of his persecutors. Malesherbes was beheaded in Paris, April 22, 1794, and bore his sufferings with a spirit worthy of his virtuous and honorable life. He was admitted to the Academy of Sciences in 1750, later to the Academy of Inscription, and in 1775 to the French Academy. He left several works on topics of the time, and on agriculture and natural history.

MALET, LUCAS, pseudonym of MARY ST. LEGER HARRISON, an English novelist, youngest daughter of Charles Kingsley; born in Eversley Rectory, Hampshire, England, in 1852. She married William Harrison, rector of Clovelly, North Devon, England (died in 1897). Her novels include: "Colonel Enderby's Wife" (1885); "A Counsel of Perfection" (1888); "Little Peter" (1887); "Mrs. Lorimer" (1882); "The Wages of Sin" (1891); "The Carissima" (1896); "Sir Richard Calmady" (1901); "The Far Horizon" (1906); "The Score" (1909); "The Golden Galleon" (1910); "Adrian Savage" (1911); "Damaris" (1916); "Deadham Hand" (1919).

MALIBRAN, MARIA FELICITA (mä-lē-bro*ng'*), a mezzo-soprano singer; born in Paris, France, March 24, 1808. She was the daughter of Manuel Garcia, a Spanish singer and teacher of singing. She made her début in London in 1825, and soon her reputation extended over Europe. She married M. Malibran, a French merchant, who soon became bankrupt. Thereupon she returned to the stage, and was received with great enthusiasm in France, England, Germany, and Italy. Her first marriage having been dissolved, she married M. Beriot, a famous violinist, in 1836. She died in Manchester, England, Sept. 23, 1836.

MALIC ACID, in chemistry, $C_4H_6O_5 = C_2H_3OH \times \begin{matrix} COOH \\ COOH \end{matrix}$ Discovered by Scheele in 1785. It is very widely diffused through the vegetable kingdom, chiefly in combination with potassium and calcium. It is found in abundance in nearly all garden fruits, such as apples, cherries, and strawberries.

MALIGNANTS, a term used in England by the Parliament men to designate those whom they considered to be the evil advisers of Charles I. They are so called in the "Grand Remonstrance," Laud and Strafford being singled out as the most prominent, and to their door are laid all the evils which afflicted the kingdom. Afterward the name was extended to all who sided with the king against the Parliament.

MALINES (mä-lēn'), or **MECHLIN** (me*h'*lin), a city of Belgium, on the Dyle, 14 miles S. S. E. of Antwerp. It has fine squares, noble buildings, and wide regular streets, but has lost its former greatness, and fallen far behind other Belgian cities in commercial enterprise and industrial activity. As the see of the primate of Belgium it still retains a certain degree of ecclesiastical importance, and possesses numerous churches, the most noteworthy of which is St. Rombold's Cathedral, a vast building, covering nearly two acres, its interior adorned with Van Dyck's "Crucifixion." It was mostly built in 1437-1452, but its clock tower, 324 feet high, remains unfinished. The churches of St. John and of Our Lady contain works by Rubens; the town hall dates from the 15th century; the Cloth Hall (1340) is now used as a guard house; noteworthy also are the splendid modern archiepiscopal palace, the Beguinage, the Salm inn (1534), and the monument to Margaret of Austria (1849). The manufacture of pillow lace, so famous in the 17th century (see LACE), has been largely transferred to Brussels, etc.; but linen and woolen fabrics, beer, needles, etc., are made here. The city was captured by the Germans in August, 1914, but they were forced out by Belgians of the Antwerp garrison. The Germans bombarded and regained the place, holding it to the close of the war. Pop. about 60,000.

MALINGERING, feigning disease on the part of a soldier, sailor, prisoner, etc., in order to obtain discharge from service, or escape from duty or labor. As defined in the British Army Act of 1881 it implies some overt act, such as the previous application of a ligature, or the taking of some drug, which produced the appearance of the disease said to exist. A worse form of the same crime, "wilfully maiming"—as blowing off the trigger-finger—is erroneously called malingering.

MALLECO, one of the provinces of Chile. The W. part is mountainous, the main product of the province being timber taken from the well-wooded slopes. Area, 2,900 square miles; pop. about 120,000.

MALLOCK, WILLIAM HURRELL, an English author; born in Devonshire, England, in 1849. He was educated by a private tutor, and afterward at Oxford, where, in 1871, he gained the Newdigate Prize Poem. He never entered a profession, though at one time he contemplated the diplomatic service. "The New Republic," most of which he wrote while at Oxford, was published in 1876; a year later "The New Paul and Virginia"; in 1879 "Is Life Worth Living?" appeared; in 1880 a small edition of "Poems," written, most of them, many years previous; the following year "A Romance of the Nineteenth Century," and, in 1882, "Social Equality." Other of his works are "Every Man His Own Poet"; "Property and Progress"; "Labor and the Popular Welfare" (1893); "Aristocracy and Evolution" (1898); "Reconstruction of a Belief" (1905); "The Nation as a Business Firm" (1910).

MALLORCA. See MAJORCA.

MALLOW, a genus of plants of the natural order *Malvaceæ*, whose species are herbaceous plants, or more rarely shrubs. The common mallow is plentiful over most of Europe, and in Great Britain on waysides and heaps of rubbish. It is a perennial, with rather large bluish-red flowers on erect stalks. The dwarf mallow, also a common native of Great Britain, has smaller whitish or reddish-white flowers. The marsh mallow belongs to another genus.

MALMAISON (mäl-mā-zôn*g*′), a château on the left bank of the Seine, 10 miles W. of Paris. It was the favorite residence of Josephine, wife of Napoleon I., and here she died. The château belonged to Richelieu, and was restored by Napoleon III. in 1861. A sortie by Ducrot from Paris in 1870 was repulsed here by the Germans.

MALMAISON, BATTLE OF, was fought by French troops under General Maistre, Oct. 23-25, 1917, when the Chemin-des-Dames was cleared of the enemy and the Germans driven to the Ailette River. The front attack covered 12 kilometers and was preceded by six days of artillery preparation in which 25 million shells of "75's" alone were fired. The French troops attacked before daybreak on Oct. 23. The soldiers under General Maud'huy holding the left of the line, when they heard that they were opposed by two divisions of Prussian Guards whom they had defeated at Verdun, were aroused to such determination that in 45 minutes they had planted their flag on the Fort of the Malmaison. In this battle the French captured 11,000 prisoners, of whom 257 were officers, and 200 cannon.

MALMESBURY, a market town of Wiltshire, England; on a bold eminence between the two head streams of the Avon, 26 miles N. N. E. of Bath. It owes its name to Maildulf, an Irish missionary. Aldhelm, his scholar, became about 673 first abbot of the famous abbey here, in which Athelstan was buried, and of which William of Malmesbury was librarian and precentor in the first half of the 12th century. To his time belong the building of a short-lived castle, and the rebuilding (also by Bishop Roger of Salisbury) of the abbey church, which, Transition Norman in style, and cruciform in plan, with a central spire, was 350 feet long. Little more than the nave —now the parish church—remains; but this is a most interesting fragment, its finest feature the S. porch. At the Dissolution (1539) the mitered Benedictine abbey became a cloth factory. A beautiful market cross (temp. Henry VII.) is noteworthy. Hobbes was a native of Malmesbury. Pop. (1920) about 2,700.

MALMESBURY, WILLIAM OF. See WILLIAM.

MALMÖ (mäl′muh), the third largest town of Sweden, on the Sound, nearly opposite to and 17 miles from Copenhagen; besides being a busy seaport, it has manufactures of cigars, sugar, beer, and woolens, and some shipbuilding; the exports (chiefly grain, flour, butter, eggs, cement, chalk, matches, live stock, and timber) are carried away every year in about 3,500 vessels of 750,000 tons burden, and the imports (coal, machinery, cotton, grain, textiles, coffee, etc.), brought by 3,600 vessels of 720,000 tons; the town hall is a fine Renaissance building of 1546. The only remaining part of the old fortifications is the castle in which the Earl of Bothwell was confined; it is now used as a prison. Down to the 16th century Malmö was one of the busiest commercial towns in that part of the Baltic. In 1523 a treaty of peace between the Danes and Gustavus Vasa was signed here. Pop. (1918) 112,521.

MALMSEY (mäm′zi), a name bestowed originally on the red and white wines of Napoli di Malvasia or Monemvasia, in the Morea, not because it produced them, but because it exported them; they were grown in the islands of the Ægean and the Levant. The Malmsey wines of modern commerce are mostly the produce of Teneriffe, Madeira, the Azores, Sardinia, Sicily, and one or two other places.

MALONE, a village and county-seat of Franklin co., N. Y.; on the Salmon river and on the Central Vermont and the New York Central and Hudson River railroads; 60 miles N. E. of Ogdensburg. It contains the Northern New York Institution for Deaf Mutes, Franklin Academy, the Wead Public Library, Alice Hyde Memorial Hospital, electric light plants, National banks, and several weekly newspapers. It has flour, woolen, and paper mills, a tannery, machine shops, railroad shops, etc. Malone was the birthplace and home of Vice-President William A. Wheeler. Pop. (1910) 6,467; (1920) 7,556.

MALONE, EDMOND, a British Shakespearean scholar; born in Dublin, Ireland, Oct. 4, 1741. He was graduated with credit at the university there, and called to the Irish bar in 1767. Falling soon after into a fortune, he went to London to devote himself to literary pursuits, his first work being a "supplement" to Steevens' edition of Shakespeare (1780). Malone's own edition of the great dramatist (1790) was warmly received. In 1797 he published a posthumous edition of the works of his friend Sir Joshua Reynolds. His own death occurred in London, May 25, 1812. He left behind a large mass of materials for another edition of Shakespeare, which at length appeared in 1821, in 21 volumes, under the editorship of James Boswell the younger.

MALONIC ACID. $CH_2(COOH)_2$. An organic compound of the oxalic acid series, first prepared by oxidizing malic

acid. It is a colorless, crystalline substance, soluble in water, alcohol and ether, melts at 133° C., and, at higher temperatures, decomposes into carbon dioxide and acetic acid. It occurs in the calcium salts found in beet sugar manufacture, and is prepared from chloracetic acid. It is used in the synthesis of other organic compounds.

MALONIC ESTER. Ethyl malonate $CH_2(COOC_2H_5)_2$. A colorless liquid, specific gravity 1.061, boiling point 198° C. Soluble in alcohol and ether, very slightly soluble in water. Prepared by heating cyanacetic acid with absolute alcohol in the presence of hydrogen chloride. The compound is of peculiar interest from the chemical point of view because of the readiness with which fatty acids can be synthesized by its use. It is also used commercially for organic synthesis.

MALORY, SIR THOMAS, Knight, was born probably about 1400, the son of Sir John Malory of Newbold Revell. As a young man he served in France under the renowned Richard Beauchamp, Earl of Warwick, known as the "father of courtesy." In 1445 he was member of Parliament for Warwickshire, and he took part in the Wars of the Roses on the Lancastrian side. He died on March 14, 1470, and was buried "in the Chapel of St. Francis at the Gray Friars, near Newgate, in the suburbs of London," leaving a widow and a grandson.

This is practically all that is known of the author of the famous "Morte d'Arthur," which he finished in the year of his death, and which was printed by Caxton in 1485. The "Morte d'Arthur" is a compendium, not particularly orderly or consistent, of the stories of King Arthur and the Knights of the Round Table, translated from somewhat degraded French versions into English prose. These stories had formed one of the chief themes of the French and English metrical and prose romances from the 12th century, and in this book Malory collects them in a form which may be regarded as summing up the mediæval treatment, while it constitutes the source from which many modern poets have drawn the material for numerous poetic and dramatic versions.

The little that we know of Malory corroborates the impression we derive from his book, that he was a man in love with chivalry. When he was an old man, in the period when chivalry was beginning to decline, he appears to have devoted his last years to translating into his own tongue the stories which seemed to him to be the best embodiment of that spirit of knightly courage and loyalty, of devotion to women and the church, of generosity, honor, truth, and courtesy, which marked the finest type of mediæval gentleman.

Though Malory's work is a translation, it is written in a dignified yet natural style, which flows smoothly, and is capable of great variety of expression, being vigorous and forcible in the descriptions of fighting, delicate and tender in the pathetic passages, and suffused throughout with a fine idealism. It stands at the end of the Middle Ages, transmitting to the modern world the best of the preceding age.

MALOT, HECTOR (mä-lō'), a French novelist; born near Rouen, France, May 20, 1830. He was a prolific writer. Of his numerous works the best known are: "The Victims of Love," in three parts; "The Lovers"; "Husband and Wife"; "The Children"; "Doctor Claude"; "Accomplices"; "In the Bosom of the Family"; etc. Most of his books treat of French life under the Second Empire. He died in 1907.

MALPLAQUET (mäl-plä-kā'), **a village** in the French department of Nord, 10 miles S. of Mons in Belgium. Here, Sept. 11, 1709, over 90,000 British and Dutch, under Marlborough and Prince Eugene, defeated about the same number of French under Marshal Villars. In this "very murderous battle," as Marlborough called it, the loss of the allies was from 20,000 to 30,000, of the French from 6,000 to 16,000. Its result was the capture of Mons.

MALT, grain, usually barley, steeped in water and fermented, by which the starch of the grain is converted into saccharine matter, dried on a kiln, and then used in brewing ale, stout, beer, or porter, and in the distillation of whisky.

MALTA (mâl'tä) (anciently Melita), an island in the Mediterranean belonging to Great Britain; 62 miles S. S. W. of Sicily, and 197 miles N. of Africa; length 17 miles; central breadth, about 9 miles; area, 95 square miles, to which the adjoining islands of Gozo and Comino add 24; pop. about 225,000. It is of an irregular oval shape, deeply indented on all sides except the S., where the coast forms a continuous and almost unbroken line. The most important indentation is the double bay on which the capital, Valetta, stands. The greatest elevation of the island is about 750 feet. The soil is thin, and rests on a calcareous rock; in some parts earth has been brought from Sicily and put down. Corn, cotton, potatoes, and clover are the chief crops.

Both the vine and olive are cultivated, and fruit, particularly figs and oranges, is very abundant. The manufactures consist of cotton goods, lace, jewelry, etc. The central position of Malta in the Mediterranean makes Valetta an invaluable naval station, although the harbor is open to objection on account of its small size; it has been provided with excellent docks and very strong fortifications. The climate is very hot in summer, but pleasant and healthy in winter, attracting many visitors at this season. During the World War Malta was an important naval station for the British and the Allied navies.

Malta passed successively through the hands of the Phœnicians, Greeks, and Carthaginians, and was finally attached to Rome during the 2d Punic war. After the fall of the Roman empire it was seized at different times by Vandals, Goths, and Saracens. From the last it passed to Sicily, and followed its fortunes till 1522, when Charles V. granted it to the order of St. John of Jerusalem. In 1798 the grand-master surrendered it without defense to Napoleon. It was taken by the British in 1800, and finally annexed by them in 1814. The executive government is in the hands of a governor and council. Excavations carried on in 1916-1918 have revealed the existence of an advanced primitive civilization. The educational institutions include a university, a lyceum, secondary schools, besides primary and infant schools. Besides the capital Valetta and the "Three Cities" adjoining there are several considerable towns or villages.

MALTESE CROSS, a cross formed of four arrow-heads meeting at the points; the badge of the Knights of Malta. The eight points of this cross are said to symbolize the eight beatitudes. This form of cross is the emblem of the order known as "King's Daughters and Sons."

MALTESE DOG, a small variety of spaniel, with long, silky hair, most frequently white; the muzzle is round.

MALTESE ISLANDS. See MALTA.

MALTHUS, THOMAS ROBERT, an English political economist; born in Albury, Surrey, England, Feb. 14, 1766. He was appointed about 1805, Professor of History and Political Economy in the college of the East India Company at Haileybury, and continued to hold that situation till his death. His best known work, the "Essay on the Principle of Population," first appeared in 1798. It was subsequently enlarged, and passed through many editions. The Malthusian system is founded on the hypothesis that population increases in a geometrical, while provisions only increase in an arithmetical ratio. He died in Bath, Dec. 29, 1834.

MALTING, a process by which barley, wheat, rye, or any other description of grain is converted into malt.

MALTOSE. Malt sugar, $C_{12}H_{22}O_{11}$. A sugar formed from starch by the enzyme diastase. Dextrin is first produced and this is further acted upon by diastase to form maltose. Pure maltose crystallizes from water in the form of crystalline flakes. The commercial product, however, occurs, mixed with more or less dextrin, as a thick syrup, varying in color from dark reddish brown to pale straw yellow. It is prepared from barley, by soaking the grain in water and then allowing it to sprout by keeping it in a moist atmosphere at a carefully regulated temperature. During this process, the enzyme diastase is formed in the grain. When the grain has sprouted sufficiently, which occurs in from nine to twenty-one days, it is dried in a kiln, the higher the temperature of drying the darker being the malt produced. The malt is then stirred with water and kept at 60-65° C. in order to bring about diastatic fermentation, by which process the starch in the grain is converted into dextrin and maltose.

$$C_6H_{10}O_5 + H_2O = C_{12}H_{22}O_{11} + C_6H_{10}O_5$$

Starch Water Maltose Dextrin

The extract thus produced is clarified and decolorized by treatment with carbons and by other methods, and is then evaporated to the consistency of a thick syrup. It is used in the manufacture of candy and soft drinks, and to an increasing extent as a table syrup, and for domestic purposes as a substitute for cane sugar.

MALVERN, GREAT, one of the most fashionable watering-places in England, on the E. side of the Malvern Hills, at the foot of the Worcestershire Beacon, from the summit of which (1,444 feet above the sea-level) extensive views are obtained. It is irregularly laid out, and has a fine cruciform church, with a square embattled tower 124 feet high rising from the center, rebuilt in the reign of Henry VII., and restored in 1860-1861. On the outskirts is Malvern College. Madame Goldschmidt (Jennie Lind) resided near Malvern many years previous to her death. Pop. about 17,000.

MALVERN HILL, an eminence near the James river, S. E. of Richmond, Va. Here, on July 1, 1862, the Confederates under Lee were defeated by the Union army under McClellan.

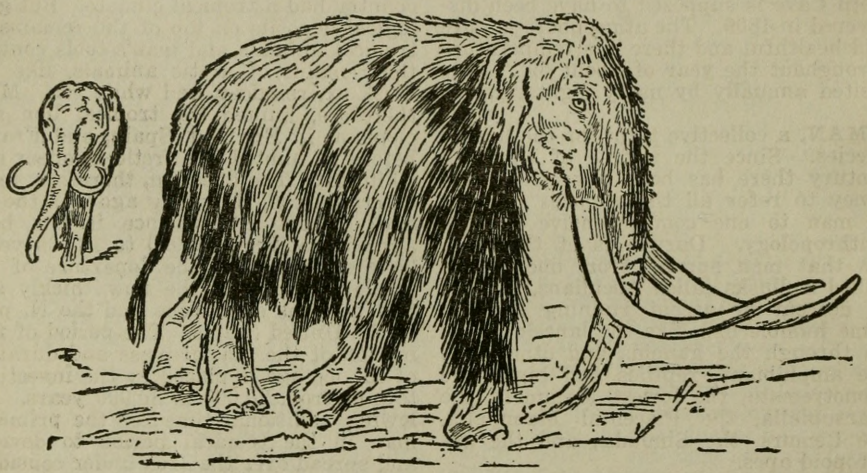
MAMARONECK, town in Westchester co., N. Y., on Long Island Sound, 20 miles from New York City. Takes in Larchmont, and many New York business men have homes there. Has clothing and rubber goods factories, but chiefly noted as resort for bathing and yachting. Pop. (1910, including Larchmont) 7,657; (1920) 6,571.

MAMMALIA (-mā'lyä), in zoölogy, mammals, the highest class of the vertebrate sub-kingdom. The individuals are characterized by the possession of mammæ (teats), enabling them to suckle their young. The class is sometimes popularly but erroneously called quadrupeds (four-footed animals). They have red, warm blood, in this respect agreeing with birds, but differing from reptiles, amphibians and fishes. The mouth is concealed by lips and armed with bony and enameled teeth; each ramus of the mandible is composed of a simple piece of bone. The covering is of hair. Normally, there are four limbs, which in some aquatic members of the class are modified into fins. The toes are generally five. Most of the bones are solid or have cavities filled with marrow, the air cells which aid in imparting lightness to the bones of birds being, as a rule, absent. The bones of the cranium and of the face are immovably fixed to each other. The cranium is larger than in other vertebrates, the lower jaw consists of only two pieces. The vertebral column may be divided into five regions, the cervical, the dorsal, the lumbar, the sacral, and the caudal vertebræ. The heart has two auricles and two ventricles. The respiration is by lungs.

MAMMARY GLAND. See **BREAST, FEMALE.**

MAMMOTH, a gigantic prehistoric mammal. The first mammoth discovered was found imbedded in ice in 1799 on the shores of the Lena, by a Tungoosian fisherman named Schumachoff.

W. Boyd Dawkins, treating of the range of the mammoth in time and space, comes to the conclusion that it existed in Great Britain before, during, and after the Glacial period. Its remains are found in France in "enormous abundance"; there it was contemporary with the Cavemen of the Pleistocene, as is proved by a spirited engraving of it on a piece of mammoth ivory found in the Cave of La Madeleine, Dordogne; it has been found in nearly every county in England; and, broadly speaking, its range extended "over the whole land of the Northern Hemisphere."



MAMMOTH

MAMMOTH CAVE, a cavern near Green river, Edmonson co., Ky., about 85 miles S. S. W. of Louisville. The cave is about 10 miles long, but it requires upward of 150 miles of traveling to explore its multitudinous avenues, chambers, grottoes, rivers, and cataracts. The main cave is 4 miles long, from 40 to 300 feet wide, and rises in height to 125 feet. The most interesting features of the cave are: The Chief City or Temple, covering an area of about four acres, and having a dome of solid rock 120 feet high; the Star Chamber, about 500 feet long by 70 feet wide, with a ceiling 70 feet high, consisting of black gypsum dotted with many white points which, when the chamber is lighted, have all the appearance

of stars; Silliman's avenue, 1½ miles long, 20 to 200 feet wide, and 20 to 40 feet high; Cleveland's Cabinet, an arch 50 feet wide, 10 feet high, and 2 miles long, covered with a variety of formations in all sorts of shapes and of many colors; the Maelstrom Abyss and Bottomless Pit, each of which is 20 feet wide and about 175 feet deep, and the river Styx, 450 feet long and crossed by a natural bridge about 30 feet high. The cave contains various kinds of animals, and there are also found lizards, crickets, frogs, bats, and different sorts of fish. The latter include the famous eyeless fish, which are white in color. The Mammoth Cave is supposed to have been discovered in 1809. The atmosphere is pure and healthful and there is a temperature throughout the year of about 59°. It is visited annually by many sightseers.

MAN, a collective term for the human species. Since the middle of the 19th century there has been a growing tendency to refer all the sciences relating to man to one comprehensive science, Anthropology. Darwin is of the opinion that man sprung from one of the naked mollusks called Ascidians, the line of descent or ascent running through some humble fish, like the lancelot, then up through the ganoids and other fish, the amphibians, reptiles and birds, the Monotremata, the lowest Mammals, the Marsupialia, the Placental Mammalia, the Lemurs, the Simiadæ, and the anthropoid apes.

Blumenbach divided mankind into five races, the Caucasian, the Mongolian, the Ethiopian, the American, and the Malay. Cuvier reduced the five to three, the Caucasian, the Mongolian, and the Ethiopian. Pritchard extended them to seven, the Iranian (the same as the Caucasian), the Turanian (the same as the Mongolian), the Native Americans, the Hottentots, the Negroes, the Papuas or Woolly-headed Polynesians, the Alfuro and Native Australians. Latham divides mankind into three varieties, Mongolidæ, Atlantidæ, and Japetidæ. Huxley's classification of mankind is into the Australoid, Negroid, Mongoloid, Xanthochroic, and Melanchroic races.

Tools distinguish man from other animals, and so where tools are found in geological strata and débris it is known that man must have been. The earliest tools were flaked stones and cracked bones. All flaked stones and cracked bones, however, may not be tools. Some of the flaked stones, for example, may have been produced by action of fire. Man is the only animal which uses fire, of course, but then fire may exist without the agency of man. Lightning, volcanic action, spontaneous combustion, and burning wells and springs may produce conflagrations, and therefore produce flaked flint stones. The earliest deposits in which stone tools and weapons clearly shaped by man are known to have been found are the gravel beds in the valleys of the Thames in England, the Somme in France, the Manzares in Spain, and in other portions of western Europe. These tools and hunting weapons are found alongside of tropical fauna, like the lion, elephant, hippopotamus, and large apes.

It is known, therefore, that man lived in Europe during a period when that country had a tropical climate. But geological deposits on top of the remains of tropical animals and man's tools contain the remains of arctic animals, like the musk ox, reindeer, and white fox. Man, therefore, hunted the tropical lion and elephant in England, Spain, and France before he hunted the arctic reindeer and white fox. The question, therefore, to be determined is, How long ago was the ice age? From all evidence it has been agreed that from 10,000 to 12,000 years have elapsed since the departure of the glacial mass from the now thickly settled portions of Europe and the N. part of the United States. The period of formation of the glacial mass and duration of the ice age is placed by the investigators at from 20,000 to 30,000 years. Allowing additional time for the primeval man in the tropical period to develop and spread over the area under consideration, the total of 50,000 years is arrived at as the approximate time which has elapsed since the earliest authentic traces of man on the earth.

MAN, ISLE OF. See ISLE OF MAN.

MANAAR (mä-när'), **GULF OF**, an inlet of salt water lying between Ceylon and the Madras coast, and closed on the N. by a low reef of rocks and islands called Adam's Bridge. Its extreme width is nearly 200 miles. The gulf is famous for its pearl fisheries.

MANABI, province of Ecuador, of which the capital is Puerto Viejo. Adjuts on the coast and produces cacao, sugar, and other agricultural products. Pop. about 65,000.

MANACLE ROCKS, a dangerous reef on the S. coast of Cornwall, England, not far from Lizard Head and near the town of Falmouth. They are barely visible, except at low water, and there is no warning of their presence to the mariner except a bell buoy. Many wrecks have occurred here.

MANAGUA (mä-nä'gwä), the capital of Nicaragua, situated in a fertile district, on the S. shore of Lake Managua, 53 miles S. E. of Leon. Pop. about 35,000.

MANAHIKI (mä-nē-hē'kē) **ISLANDS**, a group of low, wooded atolls, scattered over the Central Pacific, between the Marquesas and Union groups; area 12 square miles; pop. (1920) about 500. Most of these islands, as Caroline, Malden, Starbuck, Penrhyn, Humphrey, Vostok, Flint, and two or three others, belong to New Zealand.

MANAOS (mä-nä'ös), capital of the state of Amazonas, Brazil, on the Rio Negro, 12 miles above its confluence with the Amazon. A whitewashed cathedral rises in the center of the town, which also has a custom house and a military hospital. It is a well-built city, with many modern municipal improvements. There are a school of chemistry, a museum, and a public library. The city is a steamboat station, and has a considerable trade in various forest products, but principally in india-rubber. Pop. about 50,000.

MANASAROWAR (mä'"nä-sä"rō-wär'), a lake of Tibet, N. of the main chain of the Himalaya Mountains; it is almost circular in form, about 15 miles in diameter, and drained by the Sutlej.

MANASSAS JUNCTION, a small town in Prince William co., Va. (twice during the Civil War an important military position), where the Alexandria and Manassas Gap railways meet, near a creek named Bull Run, 35 miles S. W. of Washington, D. C. The battles of Bull Run, fought July 21, 1861, and Aug. 29-30, 1862, were known to the Confederates as the battles of Manassas.

MANASSEH, in Scripture history, the eldest son of Joseph, born in Egypt. His descendants constituted a full tribe. This was divided in the promised land; one part having settled E. of the Jordan, in the country of Bashan, from the river Jabbok N.; and the other W. of the Jordan, between Ephraim and Isnachar, extending from the Jordan to the Mediterranean. A King of Judah, who succeeded his father, Hezekiah, at the age of 12 years. In 677 B. C. Esarhaddon, King of Assyria, invaded his dominions, and carried Manasseh captive to Babylon. After a long captivity, the King of Babylon restored him to his kingdom. On his return to Jerusalem he established the worship of the true God. He died in 643 B. C.

MANATEE, any individual of the genus *Manatus*, more particularly *M. australis* (*americanus*), first discovered by the early Spanish colonists. Manatees are found in the creeks, lagoons, and estuaries of some of the West India islands, on the American coast from Florida as far as 20° S., in the great rivers of Brazil, on the coast of Africa from 16° N. to 10° S., and in Lake Tchad. They are slow and inactive and quite inoffensive; they browse on aquatic, preferably fluviatile, plants in shallow water. Their numbers are rapidly diminishing, as they are hunted for the sake of their skin, the oil they yield, and their flesh.

MANCHA, LA (män'chä), a district of Spain, in the old kingdom of New Castile, comprising most of the present province of Ciudad Real, with parts of Albacete, Toledo, and Cuena. It is the country of the ever-memorable Don Quixote, his squire Sancho Panza, and of the peerless Dulcinea del Toboso.

MANCHE (mänsh), **LA**, a maritime department in the N. W. of France, formed from the old province of Normandy, derives its name from La Manche (the English Channel), which washes its rock coasts; greatest length, 81 miles; average breadth, 28 miles; area, 2,475 square miles; pop. about 500,000. The climate is mild, but humid. Cereals, flax, hemp, beet root, and fruits are extensively cultivated. Horses of the true Norman breed are reared, and excellent cattle and sheep are fed on the extensive pastures. There are valuable granite quarries. The port of Cherbourg and the rock of St. Michel (with its celebrated abbey) belong to this department.

MANCHESTER, a town in Hartford co., Conn.; on the Hockanum river and on the New York, New Haven, and Hartford and South Manchester railroads. There is a public library, high school, electric street railroad, and electric lights, and several newspapers. It has extensive manufacturing plants, including the great Cheney silk mills, paper mills, cotton and woolen mills, electrical supply works, etc. The town was reincorporated in 1907 and has the commission form of government. Pop. (1910) 13,641; (1920) 18,370.

MANCHESTER, a city and one of the county-seats of Hillsboro co., N. H.; on the Merrimac river and on several branches of the Boston and Maine railroad; 56 miles N. of Boston. It derives water power for manufacturing from the Amoskeag Falls in the Merrimac, by means of a system of canals. There are

the Elliott and Sacred Heart Hospitals, the Woman's Aid Home, United States Government Building, public library, high school, and training school. The city has waterworks supplied by gravity from Lake Massabesic, electric light and street railroad plants, several National banks, daily and weekly newspapers, and more than 30 churches. The chief industrial plants are the great Amoskeag, Stark, Manchester, and Amory cotton mills. The city also has manufactories of locomotives, fire engines, machinery, hosiery, shoes, etc. Pop. (1910) 70,063; (1920) 78,384.

MANCHESTER, a city in Lancaster co., England; on the Irwell, an affluent of the Mersey, 31 miles E. of Liverpool. Including Salford, a suburban town on the W. bank of the Irwell, it stands in a large plain, covering over 3,000 acres, surrounded with hills except on the W., and is the center of the cotton trade of Great Britain, and one of the principal manufacturing cities in the world. The Irk and the Medlock join the Irwell near the town, and are of the greatest advantage to it. The MANCHESTER SHIP CANAL (*q. v.*) has greatly developed the city's industrial importance. Factories and warehouses are numerous and of gigantic proportions. The principal among its public buildings are the Exchange, built in the Doric style; the Town Hall, an elegant building of Ionic architecture, formed on the model of the Temple of Erectheus at Athens, and the Corn Exchange. It has also several educational institutions, one of which, the college founded by Humphrey Chatham in 1665, contains a large library. There are, besides, several public libraries and a number of associations for promoting literature and science. It is as a manufacturing city that Manchester derives its importance, being the great center of the cotton manufacture of England. Besides the population connected with the factories, which almost absorb the plain goods trade, the principal articles manufactured are velvets, fustians, dimities, calicoes, checks, tickings, jeans, shirtings, ginghams, quiltings, handkerchiefs, nankeens, diapers, muslinets, muslins, cambrics, and almost every kind of fancy cotton and silk goods. The spinning trade is extensive, and considerable quantities of yarn are annually exported. Manchester derives considerable advantages from the almost inexhaustible coal fields in its neighborhood, and from the canals and railways which connect it with different parts of the country and the E. and W. seaboard. The climate of Manchester is very healthy, despite the disadvantage of the prevalence of smoke arising from the number of factories, etc. Pop. about 775,000.

MANCHESTER SHIP CANAL, connecting Manchester, England, with the open sea by means of ship traffic. The project was first sanctioned by Parliament in 1885. Work began in 1887. The ceremony of opening it to traffic was performed in 1894. The canal is 35 miles long, and the expenditure was over $60,000,000. One of its interesting features is a swing aqueduct, which, including the water contained in it, weighs 1,600 tons, this being the first of its kind ever constructed.

MANCHURIA (-tshŏ'ri-ä) (Chinese Shing-King), a Chinese territory occupying the N. E. corner of the empire; bounded on the N. and E. by the Amur and Usuri, which separate it from the Russian territory; on the W. by the provinces of Irkutsk, Mongolia, and Chihli, on the S. by the Gulf of Leaotong, the Yellow Sea, and Korea; it is divided into three provinces, Shing-King, Feng-Tien, or Leaotong in the S. (of which Mukden is the capital), Kirin in the center (with a capital of the same name), and He-Lung-Kiang in the N. (with capital Tsitsihar); total area, 362,310 square miles; pop. (est.) 13,000,000. The country is mountainous, but on the whole fertile. The climate is good; though the winters are severe, they are healthy and bracing. The vast forests of the N. are rich in useful timber of all kinds. The principal food crops are pulse, millet, barley, and wheat. The vine, indigo, cotton, tobacco, etc., are cultivated. The administration is military, the governors of the two N. provinces being subordinate to the governor of Mukden. The Manchus are a hardy race and their country has long been the great recruiting ground for the Chinese army; but of late years vast numbers of Chinese proper have flocked into it, so that now they by far outnumber the native race. In the 17th century the Manchus invaded China and placed their leader's son on the throne. From that time until the final deposition of the Manchu dynasty, China continued in nominal rule of the country.

With the completion of the Trans-Siberian Railroad in 1901, Russia began an aggressive attempt to control Manchuria. The Boxer Rebellion in 1900 furnished an excuse for the sending of Russian forces into the province. These were not withdrawn after the disturbances had been quieted, although the Russian Government had promised that the occupation would not be permanent. Japan, which al-

so coveted the economic control of this vast area, viewed possible Russian absorption with great hostility, and fear of this was one of the chief causes of the Russo-Japanese War in 1904-1905. By the treaty of Portsmouth, signed in 1905, both Russia and Japan pledged themselves to evacuate Manchuria, except as regarded Kwang-Tung in which, with the consent of China, Japan succeeded to the Russian lease and rights. By the terms of the treaty, Russia also turned over to Japan a portion of the Manchurian Railway, terminating at Port Arthur.

In spite of promises thus given, both Russia and Japan continued, following the war, their attempts to dominate in Manchuria. These attempts, however, have been peaceful and are covered by a practical agreement to divide the territory into Russian and Japanese "spheres of influence." In 1915 Japan obtained from China, practically by force, further concessions in Manchuria, including possession of the South Manchurian Railway. Special privileges were also granted to Japanese subjects in South Manchuria, with preference to the Japanese in respect to serving as foreign advisers or instructors in financial, military, and police matters. Indications were at the close of the World War that Japan, unless prevented by the concerted action of the Great Powers, would finally control the greater part of Manchuria. The Russian control of the northern part of the province, owing to the chaotic condition in the Russian government, became loosened. China had by 1920 ceased to have more than a nominal control over the province.

MANCHUS, a people of Tungusic (Siberian Mongolian) origin, whose representatives held the throne of China from 1644 to 1912. Before the conquest of China they were a rough, energetic, warlike people who after assuming the government of the empire showed determination and efficiency. Their original home, it is believed, was the base of the Long White Mountains north of Korea (Chosen), from whence commanded by a chieftain, Nurhachu (born 1559), they conquered almost all of Manchuria. In 1644 the Chinese General Wu-San-Kwei invited the Manchus to Peking to assist in crushing a rebellion. They came, conquered, and remained, establishing upon the Chinese throne the "Great Pure" dynasty which reigned from 1644 to 1912.

MANCO CAPAC (kä-päk'), the founder and legislator of the Peruvian empire, supposed to have flourished in the 12th century. Another inca of Peru, named Manco, succeeded his brother, who was put to death by Pizarro, 1533, and after some years of warfare was killed by the Spaniards.

MANDALAY (man'da-lā), the capital of the district of Upper Burma; situated in a level plain about two miles from the left bank of the Irrawaddy. It consists of four concentric quadrangles, of which under native rule the innermost contained the palace, etc.; the second, which was surrounded by a moat and walls, contained the houses of the government officials, soldiers, etc.; while outside dwelt the general body of the people. Pop. about 140,000.

MANDAMUS (-dā'-), a writ issued by a superior court and directed to some inferior tribunal, or to some corporation or person exercising public authority, commanding the performance of some specified duty.

MANDAN INDIANS (United States) a once famous tribe of Siouan origin now settled in the Fort Berthold Reservation, North Dakota. A prosperous energetic people when first discovered in the 18th century, they are now reduced to about 200. Though frequently migrating, they were not a nomadic people but lived in stockaded villages of round, log houses. They were agrarian and had regular seasons for hunting. They tattoed face and breast and were noted for elaborate ceremonies and rites, which included self-torture.

MANDARIN (-rēn'), a general term applied by foreigners to Chinese officers of every grade; derived from the Portuguese *mandar*, "to command."

MANDATORY, a term employed in the Covenant of the League of Nations, signifying that certain territory containing a backward population is placed temporarily under the suzerainty of one of the members of the League for administrative purposes.

MANDEVILLE, SIR JOHN, an English traveler who flourished in the 14th century. He was the author of a popular book of travels of that century, the writer of which claimed to have visited Turkey, Armenia, Tartary, Persia, Syria, Arabia, Egypt, Libya, Ethiopia, Chaldea, Amazonia, and India; to have been in the services of the Sultan of Egypt; etc.

MANDIBLE, a name applied to various jaw-organs—*e. g.*, the third pair of appendages in crustaceans, the first pair of true appendages in insects, the lower jaw in vertebrates.

MANDINGO, bay of Caribbean Sea, on isthmus of Panama. Also called San

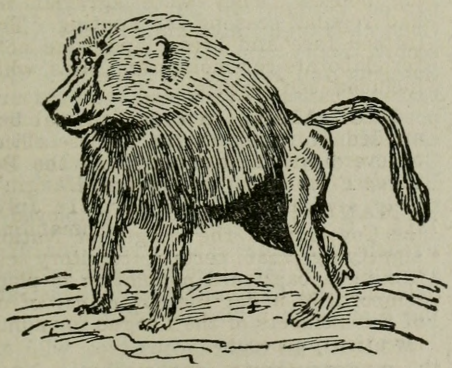
Blas, which name is derived from a minor port on the coast of the bay.

MANDOLIN, an Italian fretted guitar, so called from its almond shape. There are several varieties, each with different tunings. The Neapolitan, considered the most perfect, has four strings tuned like the violin, *i. e.*, G, D, A, E. The Milanese, next in favor, has five double strings tuned G, C, A, D, E. A plectrum is used in the right hand, and the left is employed in stopping the strings. It is written on the G clef. In the Neapolitan mandolin the E strings are of catgut, the A strings of steel, the D strings of copper, and the G strings of catgut covered with copper wire. The compass is about three octaves.

MANDRAKE, a perennial herb. From the rude resemblance of the bifurcated root to the human figure many superstitious notions have gathered about this plant.

MANDRAKE APPLE, the fruit of the mandrake; it is beautiful, fragrant, and in no way poisonous.

MANDRILL, an African baboon. A full-grown male measures about five feet when erect; the hair is light olive-brown above, and silvery-white beneath. It has



MANDRILL

a small pointed yellow beard, and a tuft of hair on the top of the head, which gives the whole face a triangular appearance. Mandrills are insectivorous; and in addition to their immense canine teeth approach the Carnivora in many points of anatomical detail.

MANDVI, the chief seaport of the principality of Cutch, in India, on the N. shore of the Gulf of Cutch, 36 miles S. W. of Bhuj, the capital. It has a good roadstead and a breakwater, but the harbor is choked with sand. Pop. about 25,000.

MANET, ÉDOUARD, a French artist, pioneer and leader of the school of impressionist painting; born in Paris, 1832. Painted in the studio of Couture for five years, and then traveled extensively over Europe studying the work of the Old Masters. He finally evolved a style of his own which revolutionized modern painting. His methods evoked a storm of criticism, and it was not until his death in 1883 that the value of his work met full recognition. Among his noted works are: "Boy with Sword," Metropolitan Museum, New York. "Guitar Player," Osborn Collection, New York. "Dead Toreador," Widener Collection, Philadelphia. "The Balcony," Luxembourg, Paris. "The Opera Ball," Havemeyer, New York. He also painted portraits of Zola, Clemenceau, and others.

MANFRED, King of Naples and Sicily; born in Sicily, about 1232. He was a natural son of the Emperor Frederick II. After the death of his brother Conrad, he became regent of the kingdom, during the minority of Conradin, his nephew. Pope Innocent IV. exciting a revolt against him, he was driven from his kingdom; but he reconquered it a year afterward, and caused himself to be crowned in 1258. Pope Urban IV. excommunicated him, and offered his kingdom to Charles of Anjou. Manfred perished in a desperate battle with the latter near Benevento, in 1266.

MANFREDONIA, a walled seaport of Italy, on the Gulf of Manfredonia, a bay of the Adriatic. Founded by Manfred in 1261 from the ruins of ancient Sipontum, it has an old castle and a cathedral.

MANGALORE, a seaport, military station, and chief town in the district of South Kanara, presidency of Madras, India. A clean, picturesque town, embosomed in cocoanut palm groves, it ships large quantities of coffee (from Coorg and Mysore) in small Arabian and Indian vessels. The town has a Roman Catholic bishop and college, and is also the headquarters in India of the Basel Lutheran Mission. The town, which was three times sacked by the Portuguese in the 16th century, was taken by Hyder Ali in 1763, and made the headquarters of his navy. In 1784 its English garrison yielded to Tippoo Sultan after a nine months' siege. It became British in 1799, and was burned by the Coorg rebels in 1837. Pop. about 50,000.

MANGAN, JAMES CLARENCE, an Irish poet; born in Dublin, Ireland, May 1, 1803. His "German Anthology" was published in two volumes in 1845, a complete edition of his poems in New York

in 1870, with a biographical introduction by John Mitchel. He died in Dublin, June 20, 1849.

MANGANESE, a metallic element which forms a distinct chemical species. It is found in many parts of the world and in the United States, chiefly in Virginia and Georgia, in the southern Mississippi Valley and on the Pacific Coast. Iron ores containing it also occur in New England and in the Lake Superior iron district. Silver ores containing manganese are found in large quantities in the Rocky Mountains and Great Basin regions. It is also obtained from zinc ores in New Jersey and elsewhere. The metal itself has no distinct use, but has great value as an alloy with copper, iron, zinc, tin, lead, and aluminum. The introduction of manganese in iron and steel adds greatly to their elasticity and hardness. The greater part of the manganese ore mined is used in the iron and steel industries. It thus became of great value during the World War in the manufacture of ordnance and munitions.

From 1890 to 1914 the United States was largely dependent upon foreign sources for manganese ores and alloys. In the latter years the supply was largely cut off from these sources and attention was directed toward domestic supplies. Experimentation was also carried on by which it was found that ores with as much as 2 or 3 per cent. of iron and as little as 70 per cent. of manganese could be used without serious loss of efficiency. Active prospecting was carried on until by 1918 many important sources of production had been discovered, especially in Montana and Nevada. The domestic production of manganese, stimulated by the demand arising from the war, greatly increased. There was, in spite of this, however, the necessity of importing large quantities, chiefly from Central and South America. The total imports of ore in 1918 amounted to 491,333 tons, of which 345,877 tons came from Brazil. Domestic shipments of high-grade ore amounted to 305,869 tons.

In the United States more than 95 per cent. of the manganese used in the industries is added to steel in the form of alloys, ferromanganese, and spiegeleisen. With the recent great development of the internal-combustion engine, the demand for high-grade manganese ore for use in making dry batteries has steadily increased, so that in 1917 the annual requirement for that industry was about 25,000 tons. The States producing the largest amount of manganese in 1918 were Montana, California, Nevada, Arizona, and Virginia. The value of the domestic production in 1918 was $8,240,386.

MANGANITE, an ore of manganese, consisting of hydrated manganese exide, $Mn_2O_3.H_2O$. It occurs as orthorhombic crystals, dark steel-gray in color, with a metallic luster. Manganite is found in Alabama, Georgia, New Mexico, Germany, Scotland, Nova Scotia, etc.

MANGE, a disease of the skin occuring in dogs, horses, cattle, etc., and similar to the itch in human beings.

MANGEL WURZEL. See MANGOLD WURZEL.

MANGIN, JOSEPH, a general in command of the French forces in Tangier before the World War. He enjoyed remarkable success in training native soldiers, many fighting under him in northern France. In 1912, when El Hiba, Muley Youssef's rival, declared himself sultan, Mangin led his troops to Marakesh and rescued the French officers there. In 1916, in the Battle of Verdun, he captured Fort Douaumont from the Germans, but lost it again. In October Douaumont and Fort Vaux were regained, when the French assumed the offensive. In December General Mangin took Bezonveau Ridge, from which the Prussian Crown Prince had directed the fire on Verdun. In the spring of 1917, General Mangin, attacking in the Aisne sector, made important gains between Soissons and Rheims, but political "Defeatists" caused his removal to an obscure post. Clemenceau on accession to office sent Mangin back to the field. In the German drive of March, 1918, when the British Fifth Army was routed, Mangin's timely arrival saved the day. In July, 1918, General Mangin, commanding French and Americans, struck the first great blow of the Allies' offensive between Soissons and Château-Thierry, penetrating 6 miles on a 28-mile front.

MANGO, an umbrageous tree, wild on the western Ghats, in the Chutia Nagpore Hills and the Naga Hills, and cultivated all over India. The fruit is considered one of the very best in India; it is laxative. The bark of the root and, to a certain extent, of the stem, is used in diarrhœa, etc. The young leaves are good for pectoral complaints, the old ones for cleaning the teeth. The seeds are anthelmintic and the resin of the bark antisyphilitic. The seeds contain gallic acid. The bark and the leaves yield an inferior yellow dye. The dry unripe fruit is used as a mordant, especially in dyeing with safflower. The leaves and the bark are used in parts of India in tanning.

MANGO FISH, *Polynemus paradiseus* or *longifilis*, known in India as the tupsee. It is about 8 or 9 inches in length, and is found in the Bay of Bengal, ascending the Ganges and other rivers to a considerable extent. Its popular English name has reference to its beautiful yellow color, resembling that of a ripe mango.

MANGOLD WURZEL, or **MANGEL WURZEL**, *Beta vulgaris*, variety *macrorhiza*. It is cultivated chiefly as fodder for cattle. The roots are used for food; they have sugar enough in their composition to be profitably extracted, as is the case with ordinary beet.

MANGOSTEEN, or **MANGOSTAN**, the fruit of *Garcinia mangostana*, a fruit about the size of an orange, filled with a sweet pulp. The tree bearing it grows in Malacca, and is cultivated in South Tenasserim.

MANGROVE, a tree inhabiting the shores of the tropical parts of the world in either hemisphere, and well known to navigators on account of the dense groves which it forms, even down into the water itself. It belongs to the genus *Rhizophora* (its name being *Rhizophora Mangle*), and is principally remarkable for its seeds germinating before they leave the case in which they were generated on the branches. The young radicle grows downward through the humid air, till it reaches the mud, in which it fixes itself, and then the leaves and new stem unfold at the opposite end. The white mangrove is *Laguncularia racemosa*, and the black mangrove, *Avicennia tomentosa*.

MANHATTAN, county-seat in Riley co., Kan., 51 miles W. of Topeka, on the Kansas River, Union Pacific, and Chicago, Rock Island and Pacific railroads. Seat of State Agricultural College. Commercial center of prosperous farming, stock-raising and fruit district. Commission form of city government. Pop. (1910) 5,722; (1920) 7,989.

MANHATTAN, one of the boroughs comprising the city of New York. It is the parent settlement, built on the island of Manhattan, and is the richest and most important of the boroughs. It is joined by the borough of the Bronx. See NEW YORK.

MANHATTAN COLLEGE, an educational institution in Manhattan borough of New York City; founded in 1853 under the auspices of the Roman Catholic Church; reported at the close of 1919: Professors and instructors, 20; students, 250; president, Rev. Brother Jasper.

MANHATTAN ISLAND, at mouth of Hudson river, coterminous with the borough of Manhattan in New York City. Contains principal business and residential buildings of the city, and is over 13 miles long, with a width of 2¼ miles in the center, the area being about 22 square miles. Foundations are of rock. See NEW YORK.

MANIA. See INSANITY.

MANICHÆISM, or **MANICHEEISM** (-kē'-), the religious system founded by Mani or Manes, who either claimed to be or was regarded by his followers as the Paraclete promised by Jesus (John xiv: 16, 17). Mani postulated two primal beings, Light (God) and Darkness, under the similitude of kingdoms, and from the latter Satan and his angels were born. Adam owed his being to Satan. Continual conflict exists between the two kingdoms, and, when the Kingdom of Light is victorious, the world will be destroyed by fire, and the supremacy of God established. The ethics of the system were severely ascetic. The Manichæans were divided into two classes—the "elect" and the "hearers." The former were bound to observe the three seals: (1) Of the mouth, forbidding animal food, the use of wine and milk, and impure speech; (2) of the hands, forbidding the destruction of life, whether animal or vegetable; and (3) of the bosom, forbidding (probably) marriage (certainly offspring), since woman was regarded as the gift of the demons. The hearers were less strictly bound. The Old Testament was rejected, and only so much of the New taken as suited the peculiar tenets of the sect. They had a kind of hierarchy, and fasting was practised. The sect spread rapidly in the East, northern Africa, and southern Europe. It survived in various forms until the 10th century.

MANICHORD, an instrument resembling the spinet and harpsichord. It was originally a monochord (single string), and is referred to by Biraud de Calanson, a poet of Provence. It was played by quills operated by jacks and keys on a key board. It was one of the predecessors of the pianoforte.

MANIFEST, SHIP'S, a formal statement of a cargo for the use of the custom house officers.

MANILA, the chief town of the Philippine Islands and capital of Luzon; on the E. side of a wide bay on the S. W. coast of Luzon, 650 miles S. E. of Hong Kong, with which city it has been connected by telegraph since 1881. It is divided into two portions by the Pasig river. On the S. bank stands the old town (founded in 1571 by Legazpi), surrounded

by crumbling walls, with tolerably wide, straight streets crossing each other at right angles. Here are the archbishop's palace, numerous churches and monasteries, the cathedral, university, Jesuit observatory, arsenal, and government offices. On the N. bank are the modern suburbs, the commercial and native quarters. Under American rule the general aspect of the city has greatly changed. Suburbs have been developed along modern lines, and many important public buildings have been erected. The most important industries are the manufacture of cigars, furniture, shoes, and manufactories of hemp. The harbor has been enlarged and dredged and accommodates the largest vessels. A railway extends from Manila to Dagupan, a distance of 120 miles. The principal port of the Philippines, Manila has an export trade valued approximately at over $50,000,000 annually, and an import trade that falls but little short of that figure. Sugar, hemp, cigars and tobacco, and coffee account for three-fourths of the exports, and cotton goods, rice, wine, silk, flour, machinery and metal goods are the chief imports.

On the morning of May 1, 1898, after war had broken out between the United States and Spain, was fought the battle of Manila Bay. On May 4 Commodore Dewey seized the arsenal. Manila was invested by American troops June 30, 1898, and on Aug. 13, after an organized attack by sea and land and two hours' hard fighting, it surrendered and the flag of the United States was raised over the city for the first time. Pop. (1903) 219,928; (1920) 266,943.

MANILA BAY, a large inlet in the island of Luzon, Philippine Islands. The length of the bay is 25 miles and its width approximately 37 miles, tapering to about 11 at the entrance. It was the spot where Admiral Dewey defeated the Spanish fleet on May 1, 1898.

MANILA, UNIVERSITY OF, Philippine Islands. Founded in 1585. Was a seminary for nobles in 1601, and the Dominicans, in 1641, established here the College of St. Thomas for poor Spaniards and natives. In 1644 the college became a university. The present institution dates from 1859, and is modeled after American seats of learning. There are faculties of theology, canon and civil law, medicine, pharmacy, philosophy, art, and engineering. The great majority of the students, numbering between 700 and 800, are in the law and medical colleges.

MANIPUR (man-i-pör'), a native state in the N. E. of India, situated in the heavily timbered mountain-land between Burma, Assam, Chittagong, and Cachar; area about 8,000 square miles; pop. (1920) about 350,000, collected most thickly in one valley, 650 square miles; situated 2,500 feet above sea-level. The men are lazy, but very fond of polo. The Manipuris combine Mongolian and Aryan characteristics, and are mainly Hindus. A British political agent was established at the rajah's court in the town of Manipur or Imphail (pop. 67,000) in 1835.

MANIS, Pangolin, or scaly ant-eater; a genus of edentate mammals, belonging to the group *Effodientia* (diggers). There are no teeth, the ears small and indistinct, the tongue round and exsertile. The body and tail covered with horny imbricate scales; tail long. They can roll themselves into a ball, and are then protected by their scales, which are capable of inflicting pretty severe injuries. The genus is confined to Africa and India.

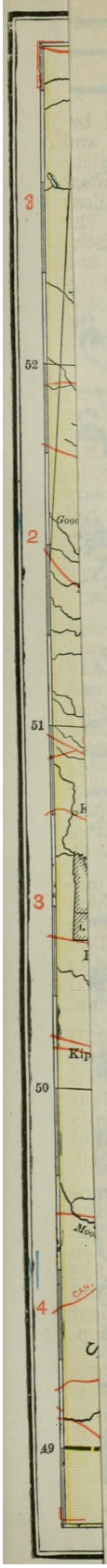
MANISTEE, a city and county-seat of Manistee co., Mich., on Lake Michigan, at the mouth of the Manistee river, and on the Manistee and Northeastern and the Flint and Père Marquette railroads; 130 miles N. W. of Lansing. It contains a city hospital, county infirmary, Industrial Home, National banks, Carnegie Library, and several daily and weekly newspapers. It has industries in lumber, salt, flour, furniture, shingles, laths, etc. Pop. (1910) 12,381; (1920) 9,690.

MANITCH, or **MANYTCH** (mänēch'), a river in South Russia, which in its course connects a series of long narrow salt lakes, and joins the Don near Tcherkask. It has been proposed to utilize it in the construction of a canal to join the Sea of Azov and the Caspian.

MANITO (man'i-tō), or **MANITOU** (-tö), among American Indians the name given to a spirit, god, or devil, or whatever is an object of religious awe or reverence. Two spirits are especially spoken of by this name; one, the spirit of good and life, the other the spirit of evil.

MANITOBA, a Province of the Dominion of Canada; bounded on the N. W. and N. by the Northwest Territories, on the E. by the Province of Ontario, and on the S. by the United States; area, 251,832 square miles, with an approximate land area of 147,152,880 acres, of which about 13,000,000 acres are occupied; pop. (1916) 553,860; capital, Winnipeg.

Topography.—The greater part of the province consists of prairie land, in a series of levels known as "steppes" or "benches" and dotted with growths of



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Copyright, L. L. Poates Eng. Co., 1911

deciduous trees, and about 30 miles E. of Winnipeg begins a swampy district, in which are occasional elevations of ground covered with cedar, spruce, white pine, aspen, cottonwood, balsam-willow, and tamarack. There are a few mountains of low elevation. Lakes, which are numerous, include Lake Winnipeg, Lake Winnipegosis, Lake Dauphin, and Lake Manitoba. The chief rivers are the Winnipeg, Assiniboine, and Red. Although the climate in winter is cold, the mercury sometimes falling to 50° below zero, it is healthful.

Soil.—The soil, containing a higher percentage of phosphate and nitrogen than any other known virgin soil, is generally a rich black mold, resting partly on a limestone formation and partly on a thick strata of hard clay, but now and then there are found unproductive sandy hills and alkaline patches. There is a luxurious growth of all kinds of vegetables and roots known to temperate climates.

Agriculture.—Wheat, oats, barley, Indian corn, hops, flax, hemp, and all kinds of garden vegetables yield excellent crops. For wheat growing Manitoba presents peculiar advantages. Potatoes and all other root-crops thrive well, and the prairie grasses furnish good hay. The total value of the crops in 1919 was $158,166,000. The live stock, dairy produce, poultry, and wool were valued at $191,730,000. There are about 50,000 farmers in the province.

Government.—The affairs of Manitoba are directed by a lieutenant-governor, appointed for a term of five years by the Canadian Governor-General-in-Council, with an Executive Council of seven members, and a Legislative Assembly consisting of 49 members, who are chosen every five years by popular vote. The province is represented in the Dominion Parliament by four senators, appointed for life by the Governor-General-in-Council, and by 15 members of the Legislature elected by popular vote. The judiciary includes a chief-justice, three judges of the Court of King's Bench, and three county judges.

Education.—The public schools are free and non-sectarian, religious instruction being permitted only by the parents' consent. The reports for 1919 showed: registered pupils, 105,000; teachers, 2,700; average attendance, 27,870. Collegiate institutes for higher education are connected with the public school system in Winnipeg, Brandon, and Portage la Prairie, and other cities.

Trade.—In 1918-1919 the exports were valued at $22,906,768, and the imports at $48,776,879.

Manufacturing.—There were in 1917 1,329 manufacturing establishments, with a capital of $101,145,033, 19,205 employees, wages $15,029,928; value of products, $122,804,881.

History.—In 1769 English fur traders visited this region. These companies were united in the Hudson Bay Company. Manitoba was first settled about 1812, when the Hudson Bay Company conveyed a grant of land to Lord Selkirk, who sent out a number of colonists. These settled on the W. bank of the Red river, 4 miles N. of the present site of Winnipeg. In 1836 the territory was repurchased by the Hudson Bay Company, and was sold in 1867 for $1,500,000 to the British Government, which then transferred it to Canada. In 1870, under a law of the Candian Parliament called the Manitoba Act, the Province began its constitutional life. The French settlers, discontented by the transfer of the Province, formed a provisional government headed by Louis Riel. On the arrival of a British military expedition Riel fled to the United States, and opposition to Canadian rule collapsed. With the completion of the Candian Pacific railway in 1886, Manitoba entered upon a new era. See CANADA.

MANITOBA LAKE, a lake of Canada, province of Manitoba, about 40 miles S. W. of Lake Winnipeg; length about 120 miles; breadth about 25 miles; area, 1,900 square miles. It receives the waters of several lakes at its N. extremity, and at its S. White Mud river. It discharges into Lake Winnipeg through the Dauphin river.

MANITOU CAVERNS, a group of caves near Manitou Springs, Col. They were discovered by George W. Snider in 1881, but were only opened to the public in 1885.

MANITOULIN (-tō'lin) **ISLANDS**, a chain of islands in Lake Huron, separating it from Georgian Bay. The principal are Grand Manitoulin (80 miles long and 28 wide), Cockburn Isle, and Drummond Isle; the last belongs to the State of Michigan, the others to Ontario. All are irregular and striking in their natural features, and Grand Manitoulin and Cockburn are covered with large forests of pine. Pop. about 2,000.

MANITOWOC, a city and county-seat of Manitowoc co., Wis.; on Lake Michigan, at the mouth of the Manitowoc river, and on the Wisconsin Central and the Chicago and Northwestern railroads; 77 miles N. of Milwaukee. Here are the County Insane Asylum, St. Mary's Hospital, the James Library, a high school,

electric light plant, banks, and newspapers. It has foundries, machine shops, furniture, agricultural implement and shipbuilding works. Manitowoc was chartered as a city in 1870. Pop. (1910) 13,027; (1920) 17,563.

MANIZALES, South America, a town in Colombia, 100 miles N. W. of Bogotá. It is an important center of the gold-mining and stock-breeding industries, with a population of about 35,000.

MANKATO, a city and county-seat of Blue Earth co., Minn.; at the junction of the Minnesota and Blue Earth rivers, and on the Chicago and Northwestern, the Chicago, Milwaukee and St. Paul, and the Chicago Great Western railroads; 86 miles S. W. of St. Paul. It is in an agricultural and timber region. Here are a State Normal School, hospitals, a public library, National and savings banks, electric lights, and waterworks. The city has daily and weekly newspapers; manufactories of fiber, linseed oil, crackers, foundry products, flour, hosiery, and candy; important marble, cement, limestone, and lumber interests. Mankato was the scene of several battles during the Sioux Indian War, and here 38 Sioux were executed in 1862. Pop. (1910) 10,365; (1920) 12,469.

MANN, HORACE, an American educator; born in Franklin, Mass., May 4, 1796. He was member of Congress from Massachusetts in 1848-1853; president of Antioch College in 1852-1859. He was one of the foremost men in educational reform; and published, besides his educational lectures and voluminous controversial writings, "A Few Thoughts for a Young Man" (1850); "Slavery: Letters and Speeches" (1851); and "Powers and Duties of Woman" (1853). He died in Yellow Springs, O., Aug. 2, 1859.

MANN, JAMES ROBERT, member of Congress from Illinois; born in Bloomington, Ill. in 1856. In his early childhood he removed with his parents to Iroquois co., Ill. He graduated from the University of Illinois in 1876 and studied law at the Union College of Law, Chicago. He was admitted to the bar in 1881 and began practice in Chicago. He served as alderman in Chicago for several years, entered actively into politics as temporary chairman of the Republican State Convention in 1894, was elected to Congress in 1897, and was successively re-elected until 1919. He became one of the most conspicuous Republican members of the House and was minority leader from the 62d to the 65th Congresses. As chairman of important committees he had much to do with the passage of important legislation and was reckoned an authority on matters relating to tariff and financial problems. Chiefly through his efforts there was passed the so-called Mann White Slave Act. On the election of a Republican Congress in 1918 he was defeated for the majority leadership by T. W. Mondell of Wyoming. He continued, however, to be one of the most influential members of the House.

MANNA, "a small, round thing, as small as the hoar frost," which lay on the face of the wilderness every morning except on the Sabbath (Exod. xvi: 14, 26, 27), sent by Jehovah as bread rained from heaven (ver. 4, 5), and continued during the whole 40 years of the Israelite wanderings in the wilderness (ver. 35). It melted when the sun became hot (ver. 21), and if left till next day bred worms and stank (ver. 20). An omer of it was preserved to show to future generations the nature of the food divinely provided in the desert. Attempts have been made to identify it with some of the other substances now named manna.

In botany, a concrete discharge from the bark of *Fraxinus rotundifolia* and some other species of the genus, including in the S. of Europe the common ash, *F. excelsior*. The sweetness is due to the presence, not of sugar, but of mannite. *Eucalyptus mannifera*, an Australian tree, exudes a substance like manna, but less nauseous. Manna of Briançon is an exudation from the common larch. Manna of Mount Sinai is an exudation produced by the puncture of an insect, *Coccus manniparus* on *Tamarix mannifera*.

In chemistry, a saccharine juice which exudes from certain species of ash, chiefly *Fraxinus ornus*, found growing in the S. of Europe and in Asia Minor. It has an odor resembling that of honey, and tastes nauseously sweet, with a slight acridity. It is soluble in water and alcohol, and its aqueous solution readily undergoes fermentation, yielding a liquid with a peculiar odor and containing butyric acid.

MANNA ASH, a tree which grows on the skirts of mountains in Calabria. Between the middle of June and the end of July the manna gatherers make an incision in the bole of the tree, which they deepen the second day, inserting a maple leaf to receive the gum. Sometimes bits of reed or twigs are applied, on which the manna hardens in tubular pieces called canali; these being considered purer than the rest, fetch a higher price.

MANNERING, MARY, an actress, born in 1876, in London, first appeared at Manchester in 1892. Came to New York in 1896, and at Buffalo, N. Y., four years later scored her first success in "Janice Meredith." She married James K. Hackett, and later F. E. Wadsworth. She retired from the stage in 1912.

MANNES, DAVID, an American violinist; born in New York 1866. He took up the violin very early and without any teaching he soon showed his remarkable talent. Later, after he had some instruction, he played in various New York orchestras, going in the summers to study under some of the noted European violinists, especially Ysaye. In 1891 Walter Damrosch engaged him for the New York Symphony Orchestra and since that time he has taken his place as one of the leading violinists of America. In 1910 he became director of the Music school settlement in which he had always been greatly interested. He took a large part, also, in founding a Musical School Settlement for Colored People in 1912.

MANNHEIM, a town and capital of the former grand-duchy of Baden, circle of the Lower Rhine, at the confluence of the Neckar and the Rhine, 37 miles S. E. of Mayence. The principal public buildings are the palace, containing museums of antiquities, natural history, etc., and a library of 80,000 volumes; the observatory, a noble building, with a curious tower 108 feet in height, and the custom house; manufactures tinsel ware, carpets, linen, and silk goods, tobacco, ribbons, shawls, etc. Its neighborhood produces hops and garden stuff in large quantities, and besides its traffic in cattle and agricultural products, it has a considerable transit trade by the Rhine and the Neckar. Pop. about 200,000.

MANNING, HENRY EDWARD, an English clergyman and writer; born in Totteridge, Hertfordshire, July 15, 1808. Originally a clergyman of the Church of England, in which he rose to be Archdeacon of Chichester (1840), he became a Roman Catholic priest in 1851; Archbishop of Westminster in 1865; cardinal in 1875. He founded the Roman Catholic University of Kensington in 1874. He was a friend of the laboring classes. He wrote: "Unity of the Church" (1842); "Temporal Mission of the Holy Ghost" (3d ed. 1877); "The Catholic Church and Modern Society" (1880); "The Eternal Priesthood" (1883); "Religio Viatoris" (A Traveler's Religion); etc. He died in Westminster, Jan. 14, 1892.

MANNING, WILLIAM THOMAS, an American Protestant Episcopal clergyman, born in 1866. He graduated from the University of the South in 1893, was ordained deacon in 1889 and priest in 1891, served as rector in Redlands, Cal., in 1892, and as profesor of dogmatic theology at the University of the South in 1893-1895. After serving as rector of several parishes he was appointed assistant rector and then rector of Trinity parish, New York, in 1908. On Jan. 26, 1921, he was elected Protestant Episcopal bishop of New York to succeed Charles S. Burch, deceased.

MANNITE, in chemistry, $C_6H_{14}O_6 = C_6H_2(OH)_6$. Mannitol, sugar of manna, sugar of mushrooms. A sugar very disseminated in the vegetable kingdom, occurring in the leaves of *Ligustrum vulgare*, in numerous bulbs, in fungi, in seaweeds, in the sap of the apple and cherry trees, limes, etc. It is most readily obtained from manna by treating it with boiling alcohol, filtering, and allowing the alcoholic solution to crystallize. From alcohol it crystallizes in fine silky needles; from water in large transparent rhombic prisms. It has an intensely sweet taste, is soluble in cold water, very soluble in boiling water, but insoluble in ether. It melts between 160° and 170°, and boils at 200°, distilling with very little decomposition. It may be prepared artificially from grape sugar by the action of hydrogen.

MANŒUVRES, or **MANEUVERS**, the movements and evolutions of any large body of troops or fleet of ships, for the purpose of testing the efficiency of the various bodies of the service under the conditions of actual warfare, and for the purpose of instructing officers in tactics, and officers and men in their various duties.

MANOGRAPH, a device for indicating the varying pressure in an engine cylinder, when the pressure changes with a cyclically varying volume. It is used chiefly on high-speed engines and internal-combustion motors.

MANOMETER, an instrument for measuring the elastic force of gases or steam. It consists of a graduated tube in which a body of confined air is compressed by the gas or steam under experimental test, a body of mercury intervening between the air in the tube and the gas or steam whose elastic force is to be ascertained. The tube containing the confined air, of a certain volume at a given temperature, is maintained at the said temperature by a bath, and is tested for the graduation of the tube by means

of a column of mercury. It is then ready for the connection by a tube with the reservoir or boiler which contains the gas or steam whose elastic force is to be ascertained. A steam gauge. Called also a manoscope.

MANOR, in English law, a lordship or barony held by a lord and subject to the jurisdiction of a court-baron held by him. In American law, a tract of land occupied by tenants who pay a fee-farm rent to the proprietor, sometimes in kind, and sometimes perform certain stipulated services.

MANOURY, GENERAL, a French officer who figured prominently in the first Battle of the Marne in September, 1914, when he commanded the 6th French Army which in the first day's fighting (Sept. 6) helped to turn Von Kluck's right wing and Sept. 9 drove the Germans across the Ourcq in retreat.

MANRIQUE, JORGE (män-rē'kā), a Spanish poet; flourished in the 15th century. He belonged to one of the oldest and most distinguished families in Spain. His chief work was an ode on his father's death (1492), now known as "Coplas de Manrique" (Manrique's Stanzas), one of the most touching poems in the Spanish language. It has often been reprinted, and was translated into English by Longfellow. Several of his love poems also have come down to us. He died in 1479.

MANS, LE (mo*ng*), a picturesque city of France, the capital formerly of the province of Maine, and now of the department of Sarthe, on the left bank of the Sarthe, 116 miles S. W. of Paris. Pop. about 70,000. The Cenomanum of the Romans, and the birthplace of Henry II. of England, Le Mans witnessed in 1793 the dispersion and massacre of more than 10,000 Vendéans; and in January, 1871, the defeat, after a stubborn resistance, of 100,000 Frenchmen under Chanzy by Prince Frederick-Charles.

MANSARD, a style of roof, also called the French curb, or hip-roof; named after a French architect, who invented it. It was designed to make the attics available for rooms, in consequence of a municipal law limiting the height of front walls in Paris.

MANSARD, FRANÇOIS (mo*ng*-sär'), a French architect; born in Paris, France, Jan. 23, 1598. He built several churches, and other public edifices in Paris. He died in Paris, Sept. 23, 1666. His nephew, JULES HARDOUIN MANSARD; born in Paris, April 16, 1646, was also an excellent architect, and the superintendent of the royal edifices. He built the palaces of Versailles, Marly, and the Great Trianon, the Hospital of the Invalides, etc. He died in Marly, May 11, 1708.

MANSFELD (mäns'felt), **COUNTS OF**, an old German noble family (founded about 1060), whose ancestral castle stood at the E. end of the Harz Mountains, 14 miles N. W. of Halle. COUNT PETER ERNEST I., afterward elevated to the rank of a prince, was born July 15, 1517. Having taken part in Charles V.'s expedition against Tunis, and distinguished himself afterward at the siege of Landrecies, he was made by the emperor governor of the duchy of Luxemburg. But in 1552, while raiding in Champagne, he was taken prisoner by the French, and not ransomed till 1557. He fought against them again at St. Quentin. On the outbreak of the revolt in the Low Countries he made a name as one of the cleverest generals in the Spanish service. In 1597 he retired to Luxemburg, where he had gathered a valuable collection of antique art, and died there May 22, 1604. His illegitimate son, PETER ERNEST II., usually called COUNT ERNEST VON MANSFELD, was born at Luxemburg in 1580 and served his apprenticeship to war in the Austrian service in Hungary and in the Juliers dispute. As part of his reward he was promised his father's possessions; but finally they were refused to him. He thereupon went over to the side of the Protestant princes. He assisted the Duke of Savoy against the Spaniards (1613-1617), and in 1618 was dispatched to Bohemia to aid the Count-Palatine Frederick, and captured Pilsen and other strongholds. But the disaster of the Weissenberg compelled him to retreat to the Palatinate, from which he carried on for nearly two years a semi-predatory war on the imperialists, defeating Tilly at Wiesloch (April, 1622). When Frederick abandoned the struggle, Mansfeld fought his way through the Spanish-Austrian forces to take service for the United Netherlands, beating Cordova at Fleurus. At the bidding of his new masters Mansfeld chastised the Count of East Friesland, and then, dismissing his army, retired into private life at The Hague. But in 1624 he resumed active work again at the solicitation of Richelieu. With an army of 12,000 men, raised mostly in England, he renewed the struggle on the Lower Elbe, till in 1626 he was crushingly defeated by Wallenstein at the bridge at Dessau. Once more raising a force of 12,000 in Brandenburg, with these and 5,000 Danes he marched by way of Silesia to join hands in Moravia and Hungary with Bethlen Gabor of Transyl-

vania. But the French and English subsidies failing, he was making his way to Venice with a few officers to raise fresh moneys when he fell sick and died, at Racowitza, near Serajevo in Bosnia, Nov. 29, 1626.

MANSFIELD, town in Bristol co., Mass., 24 miles S. W. of Boston and 20 miles N. E. of Providence. The New York, New Haven and Hartford railroad runs into it, and the industrial establishments turn out much cutlery, cocoa machine tools, and straw goods. Pop. (1910) 5,183; (1920) 6,255.

MANSFIELD, a city and county-seat of Richland co., O.; on the Pennsylvania, the Erie, and the Baltimore and Ohio railroads; 54 miles S. of Sandusky, O. Here are the Ohio State Reformatory, Memorial Soldiers' and Sailors' Building, a high school, business colleges, National and State banks, waterworks, street railroad and electric light plants, and several daily and weekly newspapers. It has manufactories of boilers, threshing machines, engines, brass goods, street cars, stoves, tubing, cigars, etc. Pop. (1910) 20,768; (1920) 27,824.

MANSFIELD, a manufacturing city 14 miles N. of Nottingham, England, situated in the midst of what remains of Sherwood Forest. Silk and cotton mills employ the majority of the people, but a large trade in agricultural produce is also carried on. The city owns the water and gas works, and conducts a mechanics' institute. Pop. about 40,000.

MANSFIELD COLLEGE, a college devoted to the study of theology at Oxford, England. Founded in 1886, when the Spring Hill College of Birmingham was transferred to Oxford, it was built and is maintained by the Congregational churches especially for the education of Congregational ministers.

MANSFIELD, MOUNT, the highest peak of the Green Mountains, in the State of Vermont, 20 miles E. of Burlington. It has three distinct summits, the highest of which is 4,364 feet above sea-level.

MANSFIELD, RICHARD, an American actor; born on the Island of Heligoland, North Sea, in 1857; first studied art, but afterward prepared for the stage; came to the United States and appeared as Dromez in "Les Manteaux Noirs" at the Standard Theater, New York. He later became very successful in many plays, and created the parts of Prince Karl, Beau Brummel, and Baron Chevrial, and the titular rôles in "Dr. Jekyll and Mr. Hyde"; also of Cyrano de Bergerac, and Monsieur Beaucaire. He died Aug. 30, 1907.

MANSHIP, PAUL, American sculptor; born at St. Paul, Minn., in 1885, received his art education in the St. Paul Institute of Art, the Pennsylvania Academy of Fine Arts, and the American



RICHARD MANSFIELD

Academy in Rome. He was awarded the Helen Barnet prize in 1913 and 1917, the George D. Widener memorial gold medal in 1914, and the gold medal of the San Francisco Exposition in 1915. His works are represented in the Metropolitan Museum, New York; the Pratt Institute, Brooklyn; the Detroit Museum of Art, the Minneapolis Art Museum, and elsewhere.

MANSION HOUSE, the official residence of the Lord Mayor of London; built on the site of the Old Stocks Market in 1739, at a cost of $213,190. It is an oblong building, and at its farthest end is the Egyptian Hall; 400 guests can dine in this grand banqueting room. Among its curiosities are a state bed, which cost about $15,000, and a kitchen and culinary utensils extraordinary for their vast size.

MANSLAUGHTER, the slaughter or killing of a human being or beings; homicide.

MANTEGNA, ANDREA (män-tān'yä), an Italian painter; born in Padua, Italy, in 1431. He was a pupil of Squarcione. About 1459 he went to Verona, where he painted a magnificent altar piece in the Church of St. Zeno. About 1466 he removed to Mantua; the rest of his life was passed there, with the exception of two years at Rome. At Mantua he opened a school, and painted among other important works the "Triumph of Julius Cæsar," now at Hampton Court. One of the latest and best of his works is the "Madonna della Vittoria" now in the Louvre at Paris. Others of his works, also in the Louvre, are "Wisdom Vanquishing Vice," and a mythological work, "Parnassus." Mantegna excelled in perspective, and in engraving, and introduced the art of engraving on copper into upper Italy. He died in Mantua, in 1506. His two sons, Francesco and Carlo, were also painters.

MANTELL, ROBERT BRUCE, an American actor; born in Irvine, Scotland, Feb. 7, 1854; made his first professional appearance, Oct. 21, 1876, as Sergeant in "Arrah-na-Pogue." He came to the United States and created juvenile rôles in 1878, with Mme. Modjeska. Subsequently he appeared as Loris Ippanhoff in "Fedora" with Fanny Davenport in New York. He later became a star and organized a company of his own, presenting chiefly Shakespearean and other classic plays.

MANTES (mänt), a town in the French department of Seine-et-Oise, on the left bank of the Seine. It has a striking tower (1344) and a beautiful church, a reduced copy of Notre Dame at Paris. The ancient Medunta, a town of the Celts, Mantes in 1087 was sacked by William the Conqueror, who here received the injury that caused his death; and here too Henry IV. was converted from Protestantism. Pop. about 9,000.

MANTIS, the so-called soothsayer, or praying insect; the typical genus of the family *Mantidæ*. Two species occur in southern Europe: *M. religiosa*, from two to two and a half inches in length, and *M. oratoria*, a smaller species. Others are found in the warmer regions of the world.

MANTIS CRAB, a name given to crustacea of the genus *Squilla*, from the second pair of jaw feet being very large, and formed very like the fore legs of insects of the genus *Mantis*.

MANTLE, a kind of cloak or loose garment to be worn over other garments. In heraldry the name is given to the cloak or mantle which is often represented behind the escutcheon. In zoölogy the mantle is the soft skin or integument of molluscous animals, otherwise known as the pallium. This structure secretes the shell when present, and where the shell is absent the mantle forms an investing sac or integument in which the viscera and other organs are contained and protected.

MANTLING, or **LAMBREQUIN** (-bur-kin), in heraldry, an ornament depicted as hanging down from the helmet, and behind the escutcheon. It is considered to represent either the cointise, an ornamental scarf which passed around the body, and over the shoulder; or the military mantle, or robe of estate. When intended for the cointise, it is cut into irregular strips and curls of the most capricious forms, whose contortions are supposed to indicate that it has been torn into that ragged condition in the field of battle. When the mantling is treated as a robe of estate, the bearings of the shield are sometimes embroidered on it. A mantling adjusted so as to form a background for the shield and its accessories, constitutes an "achievement of arms."

MANTUA (man'tū-ä), a town of northern Italy, capital of a province of same name, on the Mincio, 21 miles S. W. of Verona, and 37 N. E. of Cremona. It is partly on two islands formed by the waters of the Mincio, and partly on the mainland. Mantua is both by nature and art one of the strongest places in Europe; it is entered by bridges, flanked with redoubts, and is built on a plain of tolerable regularity, divided by a canal into two nearly equal parts. Most of the streets are broad, regular, and well paved; the houses are of stone, and in general well built; and the public squares both spacious and elegant. Of the latter, the most noted is the Piazza di Virgilio, used as a promenade. In its center stands Vergil's monument, a column of marble. The principal public edifices at Mantua are the cathedral; the Corte, with its hall; the Palazzo della Giustizia; the palace of the Gonzaga family, and the one which, from its shape, bears the singular name of the Palazzo di T; the university buildings, the arsenal, the Jewish synagogue, and the public library, containing over 80,000 volumes. Mantua contains likewise several valuable collections of paintings, and a gallery of antiquities belonging to the Academy of Arts and Sciences. Manufactures silk, woolen and linen fabrics, etc. Mantua claims an antiquity equal to that of Rome. It passed under the

Roman power 197 B. C., and was the birthplace of Vergil, 70 B. C. After numerous reverses of fortune, Mantua passed into the hands of Louis I., Duke of Gonzaga, in 1328, and under his rule attained great importance. It continued in the Gonzaga family till 1708, when it was taken by the Austrians. It was taken by Napoleon I. in 1796, and erected into the chief town of the department of the Mincio, but was restored to Austria in 1814. By the treaty of Zurich, in 1859, Mantua and Peschiera were the only towns of Lombardy left to the house of Austria, and these were surrendered in October, 1866. Pop. about 35,000.

MANUAL TRAINING, in modern education, the training of the hand and eye in the use of typical tools, suitable materials, and mechanical methods, as well as in practical drafting, including the best methods of both freehand and accurate instrumental drawing of objects already constructed and of objects to be constructed. In practice the materials specially used are wood, iron, steel and brass; lead, tin, zinc, paper, leather, sand, textiles, plaster, and clay are taken chiefly as substitutes for more intractable and expensive materials. Draftings include plans, elevations, sections, line and brush tinting and shading, lettering, methods of surface ornamentation, sketching, etc., with both pencil and pen. Manual training may be regarded either as a part of a person's general education or as a definite step in the acquisition of a livelihood. As introduced into the curriculum of schools it may subserve both ends. Manual training schools are broader in their scope than the technical or trade schools, though they are the logical outgrowth of them.

The idea of introducing tool instruction in the curriculum with science, mathematics and language in such a way that no one feature should be subordinate to another, was early undertaken at the Massachusetts Institute of Technology, at Worcester, and at the Washington University at St. Louis. Three shops were organized in St. Louis in 1877 where special students in the mechanical arts could have some training, and in 1879 the St. Louis Manual Training School was established and the school was opened in 1880. It had a great success. In 1882-1883 the National Educational Association took up the matter and soon manual training became a part of the curriculum in high and elementary schools in all the large cities of the country. Separate manual training schools have also been established in many cities. The present tendency in manual training is toward definite vocational training, and the work is carried on, as far as possible, under natural conditions. In manual training schools which are for general training no moderate literary or scientific work can be out of place; on the contrary, a large share of the time must be given to literature, mathematics, and science. Shop instruction is given. The instructor at the bench, machine or anvil explains the principles to be used or illustrated and executes in the presence of the whole class the day's lesson, giving all needed information and freely using the blackboard. When it is possible the pupils make working drawings of the piece or model to be executed, and questions are asked and answered, that all obscurities may be removed. The class then proceeds to the execution of the task, each at a separate bench and with his own tools, while the instructor gives additional help to such as need it. At a specified time the lesson ceases and the work is brought in, commented on and marked. It is not necessary that all the work assigned should be finished; the essential thing is that it should be well begun and carried on with reasonable speed and accuracy. In a manual training school, properly so called, no attempt is made to cultivate dexterity at the expense of thought.

MANUEL II., born in Lisbon, Portugal in 1889, two years after Crown Prince Luis, with the title of Duke of Beja, King of Portugal, 1908-1910. Scandalous stories were circulated about his life in Paris before he came to a throne to which he succeeded in Feb. 1, 1908, when his father Carlos I. and his brother Prince Luis were assassinated. He was acclaimed King May 6, 1908. On October 1910, the Republicans abolished the monarchy and Manuel fled to England, finding refuge with his mother's brother, the Duke of Orleans, at Twickenham. In 1913 Manuel married Princess Augustine Victoria of Hohenzollern-Sigmaringen.

MANUEL I., COMNENUS (man'ū-el kom-nē'-nus), Emperor of Constantinople; born in 1120. He was the younger son of the Emperor John Comnenus, whom he succeeded, to the prejudice of his brother Isaac, in 1143. His long reign was almost a continual succession of wars. He obtained several victories over the Sultan of Iconium in the year of his accession; the next year carried on war with Raymond, Prince of Antioch; and in 1147, on the arrival of the crusaders at Constantinople, under the Emperor Conrad and Louis VII. of France, he is charged with having flattered the Germans with promises, and by treacher-

ous guides led them on to destruction. The French were received with great honors. Roger II., King of Sicily, having invaded Greece and carried off immense spoil, Manuel made war on him, and took Corfu. Revolts of the Servians and Hungarians afterward occupied him, and in 1168 he made an unsuccessful expedition to Egypt. In 1175, he was again at war with the Turks, with alternate defeat and victory. He died Sept. 24, 1180.

MANUEL PALÆOLOGUS (man'ū-el pal-ē-ol'-o-gus), Emperor of Constantinople; born in 1348. He was the son and successor of John Palæologus. The Turks having invaded his dominions, he applied to the Latins for succor, but without effect, on which he resigned his scepter to John Palæologus II., his son, and took a religious habit. He died in 1425.

MANUFACTURERS, NATIONAL ASSOCIATION OF, an association of manufacturers in the United States first formed in 1895 in Cincinnati for purposes of mutual co-operation in regard to laws affecting their interests, the demands of labor, and the promotion of foreign commerce. The association gives information on foreign exchange and trade, credit reports, commercial opportunities abroad. Its headquarters are in New York City.

MANURE, a term applicable to any material which may be used for accelerating vegetation or increasing the production of plants. The cultivation of plants tends to exhaust the soil of its air food and ash constituents. It becomes, therefore, necessary to replace these by addition of manure. This, to some extent, proceeds naturally by the absorption of air food by the soil in the form of ammonia and carbonic acid, and also by the decomposition of the mineral matter of the soil under the influence of time and tillage. The air food is supplied by nitrogenous matters, chiefly by ammoniacal salts, and the ash constituents by the use of salts of phosphoric acid and potash, in the form of preparations from bone or in the use of a mineral phosphate. Those substances which furnish both classes of food comprise guano, stable manure, fish, seaweed, artificial saline mixtures, etc.

MANUSCRIPTS, literally, writings of any kind, whether on paper or any other material, in contradistinction to printed matter. All the existing ancient manuscripts are written on parchment or on paper. The paper is sometimes Egyptian (prepared from the real papyrus shrub), sometimes cotton or silk paper (*charta bombycina*). Black and colored inks were used, but the latter chiefly for ornamentation. On rare occasions gold and silver were the mediums, though from their cost they are oftenest confined to initial letters. With respect to external form, manuscripts are divided into rolls (*volumina*), and into stitched books or volumes (properly *codices*). Among the ancients the writers of manuscripts were mainly freedmen or slaves (*scribæ librarii*). At a later period the monks were largely engaged in the production of manuscripts. In all the principal monasteries was a *scriptorium*, in which the *scriptor* or scribe could pursue his work in quiet.

The most ancient manuscripts still preserved are those written on papyrus which have been found in Egyptian tombs. Several of these are of date considerably before the Christian era. Next to them in point of age are the Latin manuscripts found at Herculaneum. Then there are the manuscripts of the imperial era of Rome, among which are the Vatican Terence and Septuagint, and the Alexandrine codex of the British Museum. Numerous manuscripts of the Old and New Testaments of the 2d and 3d centuries exist; and among those of profane authors may be noted that of Vergil (4th century), in the Laurentian Library at Florence; a Livy (5th century), in the Imperial Library of Vienna; the Jewish Antiquities of Josephus, in the Ambrosian Library, Milan, etc. It was a common custom in the Middle Ages to obliterate and erase writings on parchment, for the purpose of writing on the materials anew, manuscripts thus treated being called "palimpsests."

The art of illuminating manuscripts dates from the remotest antiquity. The Egyptian papyri were ornamented with vignettes or miniatures attached to the chapters, either designed in black outlines or painted in primary colors in distemper. From the 8th to the 11th century the initial letters in use were composed of figures of men, quadrupeds, fishes, birds, etc. In the 16th century the art of illumination became extinct. Some attempts have been made to revive it by adorning paper, parchment, and vellum with designs in color or metals.

MANUSCRIPTS, ILLUMINATION OF. See MANUSCRIPTS.

MANZANILLO, a port on the S. coast of Cuba, about three-quarters of a mile from the mouth of the Yara, which affords at least a portion of the water supply, has a good harbor and export trade in valuable woods, sugar, etc. Pop. about 60,000.

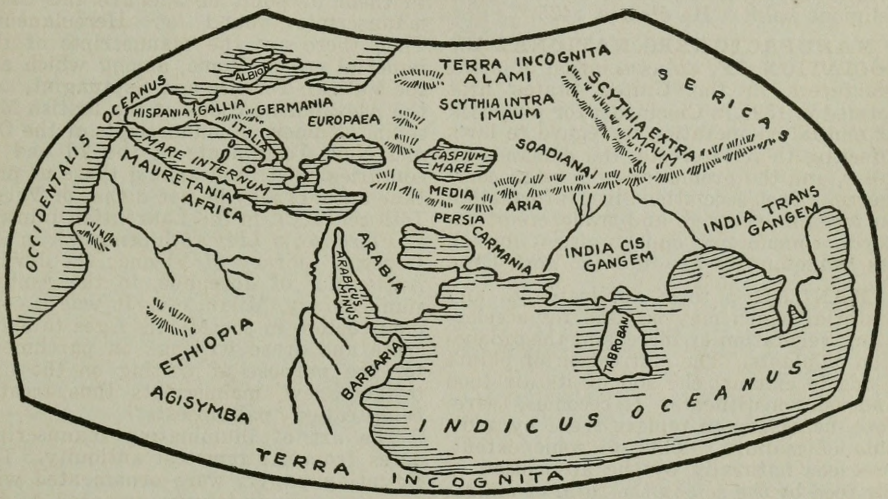
MANZANILLO (män-thä-nēl'yō), a port of Mexico, on a fine bay opening

to the Pacific, 31 miles W. S. W. of Colima. The country around is equally fertile and unhealthy. Pop. about 2,000.

MANZONI, ALESSANDRO (män-zō'-nē), an Italian poet and novelist; born in Milan, March 7, 1784. After 1805 he lived for some time in Paris, and in 1808 he married the daughter of a Genoese banker, under whose influence he settled down into Catholicism. His chief works are: "Sacred Hymns," a series of lyrics; "The Fifth of May," a powerful ode on the death of Napoleon; the tragedies "Carmagnola" and "Adelchi," and his greatest novel "The Betrothed." He died in Milan, May 22, 1873.

MAORI, a Polynesian race found in New Zealand when the island was first discovered by white men. They are physically strong and above the average in stature, fond of bodily exercise, and expert swimmers. The Maori are distinguished for tattooing, ornaments, and decorative art, and for their epic poetry, legends, and mythology. Though relatively a people of culture, they were formerly the most cannibalistic of Polynesian people. They displayed such valor and strategy in their long struggle with the British colonists as to win the admiration of their opponents. The Maori are now represented in the New Zealand Legislature on equal terms with the white members, and several have been members of the New Zealand Cabinet.

MAP, a representation of a portion of the earth's surface, or of a portion of the heavens on a plane. There are, therefore, two kinds of maps, terrestrial and celestial. Terrestrial maps are of two kinds, those which represent portions of land and water together, which are properly called "maps," and those which represent portions of the ocean, only indicating the directions of currents, soundings, anchorages, rocks, shoals, buoys, lighthouses, etc.; these are called hydrographical maps or charts. A map of the earth, or of a portion of the earth, generally shows the physical features of the country. Maps are also prepared for special purposes, as geological, statistical, ethnological, or historical maps. A representation of the meridians and circles of latitude forms, in all cases, the skeleton or basis of every map of an extensive portion of the earth's surface. The principal methods of projection are



MAP OF THE WORLD, ACCORDING TO CLAUDIUS PTOLEMY, A. D. 150

the orthographic, the stereographic, the globular, the conical, and the cylindrical or Mercator's projection. In the first three cases the plane upon which the map is to be drawn is called the primitive plane, and is supposed to be passed through the center of the earth. The various lines are projected upon this plane, by lines drawn through their different points and some fixed point, called the point of sight.

MAP, or MAPES, WALTER, a British scholar; born in the Welsh Marches, probably about 1150. He studied at the University of Paris, and made an important figure in the court of Henry II. He became Archdeacon of Oxford in 1199; contributed to the Arthurian cycle of romance the romances of the "Quest of the Holy Grail," "Launcelot of the Lake," and the "Death of Arthur"; was the au-

thor of "On the Trifles of the Court," a notebook of the events of the day and of court gossip; and to him is attributed a collection of rhymed Latin verse, in which the abuses of the Church are hit off with vigor and humor. Among the most remarkable of these are the satirical "Apocalypse" and the "Confession of Bishop Golias." He died about 1210.

MAPLE, a name for trees of the genus *Acer*, order *Aceraceæ* or *Sapindaceæ*, peculiar to the N. and temperate parts of the globe. About 50 species are known, distributed through Europe, North America, and different parts of Asia. They are small or large trees, with a sweetish, rarely milky, sap, opposite deciduous, simple, usually lobed leaves, and axillary and terminal racemes or corymbs or small greenish flowers. The wood of the great maple (*A. Pseudo-platanus*) is valuable for various purposes, as for carving, turnery, musical instruments, wooden dishes, etc. Another well-known species is the Norway maple (*A. platanoides*), often planted as an ornamental tree. The sugar or rock maple (*A. saccharinum*) is the most important American species. Some other American species are the white maple (*A. dasycarpum*), the red or swamp maple (*A. rubrum*), the striped maple or moose wood (*A. pennsylvanicum*), the mountain maple (*A. spicatum*), the vine maple (*A. circinatum*), and the large-leaved maple (*A. macrophyllum*).

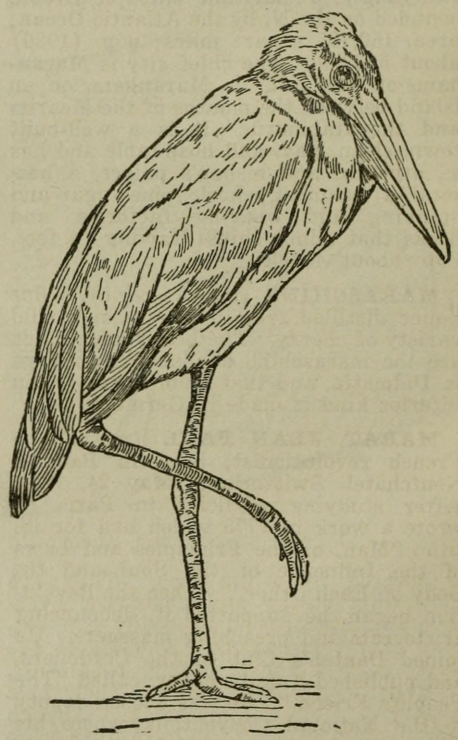
MAQUI (mak'wē) (*Aristotelia Maqui*), the only known species of the genus, which belongs to the natural order *Tiliaceæ*, and has been made the type of a proposed order. It is an evergreen or sub-evergreen shrub, of considerable size, a native of Chile. The wood is used for making musical instruments, and the tough bark for their strings.

MAR, an ancient district of Scotland between the Dee and the Don, comprising nearly the S. half of Aberdeenshire, and subdivided into Braemar, Midmar, and Cromar.

MARABOU (mar-a-bö'), the popular name for at least two species of storks of the genus *Leptoptilus*, the vent feathers of which were formerly much esteemed as ornaments and for ladies' headdresses. *L. argala* is the Asiatic marabou or adjutant. *L. marabou*, a smaller species, is from tropical Africa, where it assists the vultures in consuming the filth of the negro villages. It is, if possible, uglier than its Asiatic congener, but its delicate vent feathers are equally valued.

MARACAIBO, or **MARACAYBO** (mä-rä-kī'bō), a city of Venezuela, capital of the state of Zulia, on the W. shore of the strait which connects the lake and gulf of Maracaibo. It is a handsome town, with many gardens and squares, a college, hospitals, a theater, the usual government buildings, a custom house, wharves, and a number of manufactories. The climate is hot, the soil sandy, and the place unhealthy. The staple export is coffee; boxwood, lignum vitæ, cedar, and other woods, besides dividivi, hides and skins, and some cocoa, gums, and fish sounds, are the other exports. Pop. about 60,000.

MARACAIBO, GULF OF, or GULF OF VENEZUELA, a wide inlet of the Carribean Sea, extending from the peninsulas of Paraguana and Guajira to the



MARABOU

strait by which it is connected with the lake. The latter forms the floor of a great valley, shut in by lofty mountains. Its waters are sweet, and deep enough for the largest vessels; but the bar at the mouth, where a swift current runs, makes entrance difficult. The gulf and lake were discovered in 1499 by Ojeda, who found here houses built on piles, and so gave the district the name Venezuela ("Little Venice"), which was afterward extended to the entire country.

MARAGHA (mä'rä-gä), a town of western Persia, 55 miles S. of Tabriz and 20 miles E. of Lake Urmia. It is celebrated as the capital of Hulagu Khan, grandson of Genghis Khan, and as the site of the observatory which Hulagu built for the astronomer Nasr ed-Din. Pop. about 16,000.

MARAJÓ (mä'rä-zhō') or **JOANNES**, an island between the estuaries of the Amazon and Para; area, nearly 18,000 square miles. It is for the most part low and covered with grass and bush, but in the E. and S. with dense forest. The soil is fertile, and large herds of cattle are reared in the N. E.

MARANHAM, or **MARANHÃO** (mä-rän-ya*ng*'), a maritime state of Brazil, bounded on the N. by the Atlantic Ocean; area, 150,795 square miles; pop. (1920) about 520,000. The chief city is Maranham, or San Luiz de Maranham, on an island between the mouths of the Mearim and the Itapicurú. It is a well-built town, clean, gay, and hospitable and has a cathedral and bishop's palace, a hospital, a technical school, some sugar and spinning and weaving factories, and docks that admit ships drawing 14 feet. Pop. about 45,000.

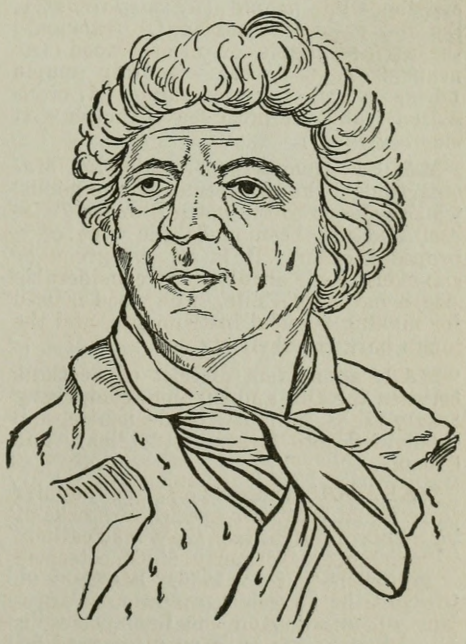
MARASCHINO (mä-räs-kē'nō), a fine liquor distilled from a small black wild variety of cherry. The best-known kinds are the maraschino de Zara, from Zara in Dalmatia, and that from Corsica. An inferior kind is made in Germany.

MARAT, JEAN PAUL (mä-rä'), a French revolutionist; born in Baudry, Neufchâtel, Switzerland, May 24, 1744. After studying medicine in Paris he wrote a work in 1775 which had for its title, "Man, or the Principles and Laws of the Influence of the Soul and the Body on Each Other." When the Revolution began, he supported it, denouncing aristocrats and preaching massacre. He joined Danton's Club of the Cordeliers, and published a daily paper, called "The People's Friend." He was chosen deputy to the National Convention, where his violence and extravagance led to his arrest, but he was acquitted. He was also president of the Jacobin Club. He denounced the generals of the French army as traitors to their country, and put the members of the Convention under arrest. The fall of the Girondists was a triumph for him and his friends, but it led quickly to his own end. He was killed by Charlotte Corday in Paris July 13, 1793.

MARATHON (mar'a-thon), a village on the E. coast of ancient Attica, 22 miles from Athens, long supposed to be the modern Marathona. It stood in a plain 6 miles long and from 3 to 1½ miles broad, with a background of mountains in the W., and a marsh both on the N. and S.; it reached the sea—"The mountains look on Marathon, and Marathon looks on the sea." Investigations by Prussian officers identify the historic village with that of Brana, nearly 2½ miles to the S., and locate the battle in the plain between the mountain Stavrokoraki and the sea, nearly 3 miles N. E. of Brana. The name of Marathon is gloriously memorable as the scene of the great defeat of the Persian hordes of Darius by the Greeks under Miltiades (490 B. C.)—one of the decisive battles of the world.

MARATHON RACES, speed and endurance races, which take the name from the traditional feat of Phidippides, who carried the news of the Greek victory at Marathon to Athens. They have become a part of nearly all important athletic meets, and especially of the international Olympic Games. The distance covered is about 25 miles.

MARBLE, a popular name for any limestone which is sufficiently hard to



JEAN PAUL MARAT

take a fine polish. Any calcareous or even any other rock which takes a good polish and is suitable for decorative or architectural purposes. Arranged by col-

or as Da Costa does, there are: (1) Marbles of one plain color, which may be black, white, ash, gray, brown, red, yellow, blue, or green; (2) Marbles of two colors, which are simply the foregoing marbles variegated with other colors; (3) Marbles variegated with many colors; and (4) Marbles containing shells, corals, and other extraneous bodies. Some of the fossiliferous limestones furnish excellent marbles. For instance, the encrinital limestones of the Carboniferous formation have the fossils white in a dark gray or black matrix. Non-fossiliferous crystalline marbles, consisting of sedimentary calcareous strata, altered by metamorphism, also furnish good marbles. The statuary marble of Italy may be of this character. The purest kinds are used for statues, those less pure as building material. The Carrara and Parian marbles are of this type. Other marbles are the Verd Antique, the Fire Marble or Lumachelle, the Giallo Antico, Madreporic Marble, etc. The Grand Cañon of the Colorado is lined in many places with magnificent marble of various colors.

Elgin marbles, a collection of bassirilievi and fragments of statuary brought from the Parthenon at Athens to England by Lord Elgin in 1814. They were afterward purchased by the British Government, and are now in the British Museum. They consist chiefly of the metopes, representing for the most part the combats of the Centaurs and Lapithæ, and the statues of fragments of statues which ornamented the tympana of the pediments of the Parthenon, or Temple of Minerva. To those were added the frieze from the Temple of Nikê Apteros, a series of casts from the Temple of Theseus, and the choragic monument of Lysicrates.

MARBLEHEAD, a town and port of entry in Essex co., Mass.; on Massachusetts bay and on the Boston and Maine railroad; 17 miles N. E. of Boston. It contains Abbot Hall with a public library and art gallery, a high school, improved waterworks, National banks, and weekly newspapers. There are 30 shoe factories, seed-growing and fisheries industries. Pop. (1910) 7,388; (1920) 7,324.

MARBURG (mär'börg), a quaint old town in the Prussian province of Hesse-Nassau, situated on the Lahn, 50 miles N. of Frankfort; built on a terraced hill crowned by a castle dating from 1065. In its Rittersaal (1277-1312) was held in 1529 the conference between the Wittenberg and the Swiss reformers regarding the Lord's Supper. The fine Gothic Church of Elizabeth, with two towers 243 feet high, was built in 1235-1283 by the Teutonic Knights over the splendid shrine of St. Elizabeth and was thoroughly restored in 1850-1867. The university occupies new Gothic buildings of 1879; in 1914-1915 had 118 professors and teachers and 2,040 students in theology, jurisprudence, medicine, and philosophy. It was founded in 1527 in the Reformed interest by Philip the Magnanimous, Landgrave of Hesse. Pop. about 25,000.

MARCASITE, a bisulphide of iron. The term includes several varieties of iron pyrites, which have been named after the form they present: viz., cellular pyrites, cockscomb pyrites, hepatic pyrites, or leberkies, etc. It is used in the manufacture of sulphur, sulphuric acid, and sulphate of iron; but not to so great an extent as the ordinary sulphide.

MARCELLINUS (-sel-lī'nus), a Pope and saint, succeeded Caius in 296. He signalized himself by his courage in a severe persecution. The Donatists charged him with having sacrificed to idols; from which accusation he was vindicated by Augustine. He died in 304.

MARCELLUS (-sel'lus), I., Pope, succeeded Marcellinus in 308. The Emperor Maxentius banished him from Rome for excommunicating an apostate. He died in 310.

MARCELLUS II., succeeded Julius III. in 1555, but died a few weeks after his election.

MARCELLUS, M. CLAUDIUS, a Roman general and member of one of the most eminent plebeian families. In his first consulship (222 B. C.) he defeated the Insubrian Gauls and slew with his own hand their king, Britomartus or Viridomarus. In the second Punic war Marcellus took command after the disaster of Cannæ, and checked Hannibal at Nola, in Campania (216 B. C.) Again consul in 214 B. C., he gave a fresh impulse to the war in Sicily. The skill of Archimedes compelled him to regularly blockade the city of Syracuse. Famine, pestilence, and ultimately treachery on the part of the Spanish auxiliaries of the Syracusans, opened its gates (212 B. C.), after which the remainder of Sicily was soon brought under the dominion of the Romans. In his fifth consulship, 208 B. C., he fell in a skirmish against Hannibal.

MARCH, a frontier or boundary of a territory; especially applied to the boundaries or confines of political divisions, or to the country lying near and about such; as, for example, the frontiers between England and Scotland, and Eng-

land and Wales. Geneva is situated in the Marches of France, Savoy and Switzerland.

MARCH, a musical composition, chiefly for military bands, with wind instruments, intended to accompany the marching of troops. There are slow and quick marches, and marches peculiar to different countries. Marches are also introduced into oratorios, the best-known examples being the "Dead March" from the oratorio of "Saul" and Mendelssohn's "Wedding March."

MARCH, the first month of the Roman year, and the third according to our present calendar, consisting of 31 days. It was considered as the first month of the year in England till the change of style in 1752, and the legal year was reckoned from March 25. Its last three days (old style) were once popularly supposed to have been "borrowed" by March from April, and are proverbially stormy.

MARCH (märh), the principal river of Moravia, rising on the boundary between that country and Prussian Silesia, and flowing 214 miles S. to the Danube, which it joins 6 miles above Pressburg. It receives on the right the Thaya. In its lower course it forms the boundary between Austria and Hungary. It is navigable for small boats from Göding, 80 miles from its mouth.

MARCH, PEYTON CONWAY, army officer; born at Easton, Pa., in 1864, graduated from Lafayette College in 1887. He then spent a year at the United States Military Academy, ten years later graduating from the Artillery School, Fort Monroe. He commanded the Astor Battery in 1898, and was at the head of the American forces in action at Tilad Pass, Luzon, P. I., in 1899, in which General Gregorio del Pilar was killed. During this expedition General Concepcion surrendered to Major March, and Aguinaldo's wife and her escort were captured. In 1917 he was appointed army artillery commander of the American Expeditionary Forces in France, and in February, 1918, was made chief of staff in the United States with the rank of Major General in the permanent establishment.

MARCHAND, JEAN BAPTISTE (mär-sho*ng*′), a French military officer; born in Thoissey, Ain, France, Nov. 22, 1863. He entered the army in 1883. He spent some time in a military school, and was then sent to Africa. His first service was in Senegambia, and as early as 1890 he was dispatched on exploring expeditions to the sources of the Niger and other districts. He established in 1898 the post of Fashoda on the White Nile, and refused to withdraw on command of the British until ordered to do so by his own government. In 1899 he received a tremendous popular ovation in Paris. He became a colonel in 1902, but retired in 1904. He performed useful service in the World War.

MARCHES, THE, a territory of Italy, comprising a region lying between the Apennines and the Adriatic, and divided into four provinces—Urbino and Pesaro, Ancona, Macerata, and Ascoli; total area, 3,749 square miles; pop. about 1,175,000.

MARCIANUS (mar-shi-ā′nus), Emperor of Rome after the death of Theodosius II., in 450. He was a Thracian of obscure origin. His reign, which lasted but six years, was marked by peaceful and energetic measures. He died in 457.

MARCOMANNI (-man′nī), a name meaning Men of the Marches, or Frontiers, or Borderers, and given by the Ro-



GENERAL PEYTON C. MARCH

mans to various tribes on the confines of Germany. Some hordes under this name were driven out of Gaul by Julius Cæsar, 58 B. C. Maroboduus formed a league among these tribes, and concluded a treaty with Tiberius (after-

ward emperor), in the year 6. The Cherusci defeated the Marcommani in 17, and a peace was mediated between them by Drusus. Domitian made war on them, and was defeated in 90. In alliance with other tribes they invaded the Roman empire in 166, when a war commenced which was not brought to a close till 180. They ravaged Italy in 270. The last notice of Marcomanni is in 451, when they formed a contingent of the army with which Attila invaded Gaul and Italy.

MARCONI, WILLIAM (-kō'nē), an Anglo-Italian electrician; born in Griffone, near Bologna, Italy, April 25, 1874. His mother was an English woman. He became a student of electrical science at 14, and began experimenting in wireless telegraphy in 1895. His first English exhibition was given in 1896, and was private. In 1903 a message was sent by President Roosevelt from Cape Cod, Mass., to King Edward VII. at Poldhu—3,000 miles. A commercial service was opened between Ireland and Nova Scotia in March, 1907. The Marconi station at Argentina sent and received messages over 7,000 miles. Mr. Marconi introduced a persistent wave system and instruments to give desired forms to dispatched wave energy. He improved the detector, and in 1910 developed a new receiver and a duplex that sent and received messages without conflicting. Marconi has been decorated by Great Britain, Spain, Russia, and Italy. Elected to the Italian Chamber, at the outbreak of the World War he was appointed Director of the Italian Wireless Telegraph Department. See WIRELESS TELEGRAPHY.

MARCUS AURELIUS. See AURELIUS.

MARCY, MOUNT, the highest peak (5,344 feet) in the Adirondacks, and the loftiest point in New York State. It is in Essex county, 10 miles south of Lake Placid.

MARDI GRAS (mär'dē grä), Shrove Tuesday, the last day before Lent. In the United States the day is observed with great ceremonies, especially in New Orleans and Memphis. These include brilliant processions, masquerade balls, and other gay entertainments, which are participated in by thousands of visitors from all parts of the country.

MARDIN (mär-dēn'), a town in the vilayet of Diarbekir in north Mesopotamia, strikingly situated on the S. slopes of the Mardin Hills. Pop. about 25,000, of whom half are Moslem Kurds.

MAREIA, LAKE. See MAREOTIS, LAKE.

MARE ISLAND, an island in San Pablo Bay, Cal., 28 miles N. of San Francisco. Here are located a United States naval arsenal and dockyard. These include wet and dry docks, marine barracks, ordnance yards, a hospital, and extensive repair shops. It is the station for the Pacific Fleet, and during the World War was the scene of many important naval activities.

MAREMMA (mä-rem'mä), a marshy region of Italy, extending along the sea coast of Tuscany from the Cecina river to Orbitello; area of about 1,000 square miles. In Roman times and earlier the Maremma was a fruitful and populous plain; but the decay of agriculture fostered malaria, which now reigns supreme in a great part of this district. Leopold II. of Tuscany directed especial attention (1824-1844) to the drainage and amelioration of the Maremma, and his efforts and subsequent measures have been attended with considerable success. Crops are now grown in the summer on the fertile soil of the infected area by the inhabitants of the adjoining hill country, who go down only to sow and to reap their crops. During winter the Maremma is healthier and yields good pasture.

MARENGO (mä-ren'gō), a village of northern Italy, in a marshy district, near the Bormida, 3 miles S. E. of Alessandria. Here on June 14, 1800, Napoleon, with 33,000 French, defeated 30,500 Austrians under Melas.

MAREOTIS (mā-re-ō'tis), or **MAREIA** (ma-rē'yä), **LAKE** (the modern El Mariut), a salt lake or marsh in the N. of Egypt, extending S. from Alexandria, and separated from the Mediterranean, on its N. W. side, by a narrow isthmus of sand. In the 15th and 16th centuries it was a navigable lake; in 1798 it was found by the French to be a dry, sandy plain; but in 1801 the English army cut the dikes of the canal that separated the Lake of Aboukir from Mareotis, to cut off the water supply of the French, and Mareotis became once more a marsh. The like happened again in 1803, in 1807, and in 1882; on the last occasion the sea was introduced directly through a cutting 15 feet wide and half a mile long.

MARGARET, Queen of Scotland; born in Hungary, about 1045. From 1057 she was brought up at the court of her great-uncle, Edward the Confessor. In 1068, with her mother and sister and her boy brother, Edgar the Atheling, she fled from Northumberland to Scotland. Malcolm Canmore next year wedded her at Dunfermline. She did much to civilize the N. realm, and still more to assimilate

the old Celtic Church to the rest of Christendom. She built, too, a stately church at Dunfermline, and refounded Iona. She bore her husband six sons and two daughters, and died three days after him, in Edinburgh Castle, Nov. 16, 1093.

MARGARET, Queen of Norway, Denmark, and Sweden, daughter of Waldemar IV., King of Denmark; born in Copenhagen, in 1353. In 1363 she was married to Haco, King of Norway, youngest son of Magnus Ericson. Magnus and his son were afterward deposed, and Albert of Mecklenburg placed on the throne. Margaret lost, in 1375, her father, Waldemar; in 1380, her husband, Haco; and in 1387, her son, Olave—events which left her queen regnant in Norway, regent in Denmark, and in a situation to receive overtures from the Swedes. Margaret at once furnished her adherents with troops and supplies of war, and the victory of Felkoiping, won by the high marshal of Sweden, Eric Kielson, Sept. 21, 1389, threw open the kingdom to her. The union of the three kingdoms was concluded by the treaty of Calmar. She died in the port of Flensburg, Oct. 28, 1412.

MARGARET OF ANJOU (*ong*-zhö'), daughter of René, King of Sicily, and wife of Henry VI., King of England; born in Nancy, France, Mar. 23, 1430. She was married to Henry in 1445. Her husband being taken prisoner, in 1455, by the Earl of Warwick, she levied forces, set Henry at liberty, and entered London in triumph. But in 1460 her army was defeated at Northampton, and Henry again became a prisoner; the queen, however, escaped into Scotland and collected another army with which she marched against the Duke of York, who fell in the battle of Wakefield. She next defeated Warwick at the second battle of St. Albans; but being routed at Towton, she fled to France to implore succor from Louis XI., who refused her any assistance. This intrepid woman then returned to England, where she was joined by several of her party, but was defeated at Hexham. In 1471 she was taken prisoner, and in 1475 she purchased her liberty by a large ransom. She then returned to France, where she died, in Dampierre, Aug. 25, 1482.

MARGARET OF NAVARRE (nä-vär'), or **OF VALOIS** (vä-lwä'), or **OF FRANCE**, daughter of Henri II. of France; born in St. Germain-en-Laye, France, May 14, 1553. She married, in 1572, Henri, then Prince of Béarn, but afterward Henri IV. of France. It was at the time of the celebration of this marriage at Paris that the massacre of St. Bartholomew was perpetrated, and Margaret narrowly escaped. It was a marriage of policy, and not of affection and was dissolved. Having returned to Paris Margaret lived in great splendor and dissipation till her death, in Paris, Mar. 27, 1615. Some very agreeable poems by her are extant, and her "Memoirs" are extremely curious.

MARGARET OF NAVARRE, Queen of Navarre, and sister to Francis I., King of France; born in Angoulême, April 11, 1492. She was the daughter of Charles of Orleans, Duke d'Angoulême. In 1509 she married Charles, Duke d'Alençon, two years after whose death she became the wife of Henri d'Albret, King of Navarre, by whom she had Jeanne d'Albret, mother of Henri VI. Besides other works, she wrote the "Heptameron," a collection of tales, after the manner of Boccaccio. She died in Bigone, France, Sept. 21, 1549.

MARGARIC (-gar'-) **ACID**, in chemistry, $C_{17}H_{34}O_2=C_{15}H_{31}.CH_2.CO.OH$. Cetyl carbonic acid. A name applied to an acid obtained by boiling cetylic cyanide with potassic hydrate solution. It resembles palmytic acid, forming white crystals, which melt at 59.9°, and boil at 277° under a pressure of 100 mm.

MARGARINE. See OLEOMARGARINE.

MARGARITA (mär-gä-rē'tä), an island in the Caribbean Sea, belonging to Venezuela; area, 380 square miles; in the state of Nueva Esparta. Discovered by Columbus in 1498, Margarita was long famous for its pearl fisheries.

MARGATE, a municipal borough of England, in the isle of Thanet, Kent. It has for many years been a favorite seaside resort. Pop. about 30,000.

MARGAY, a feline from Brazil and Guiana, where it is known as the tiger cat. It is smaller than the ocelot (*Felis pardalis*), to which it has a general resemblance, though it is not so handsome. It is capable of domestication.

MARGHERITA, Queen Dowager of Italy. Born at Turin in 1857. Daughter of Ferdinand, Duke of Genoa. Married in 1868 the Prince Royal Humbert, who succeeded his father Victor Emanuel to the throne Jan. 9, 1878, and was assassinated July 9, 1900.

MARGIN DEALS, term to denote transactions in stocks, bonds, or foodstuffs, subject to fluctations in value, regarded as illegal in a number of States. Usually the transaction consists in a broker advancing the money to a client

for the purpose of purchasing shares of stock or bonds, the latter giving a collateral security to cover the margin of probable fluctation. If the value of the matter dealt in decreases below the margin covered by the security, the broker is at once privileged to sell and recoup himself out of the security. A rise in value constitutes the winnings, or gain, of the party who has advanced the security.

MARGUERITTE, PAUL, born in 1860. **VICTOR,** born in 1866. French writers and novelists, brothers, and sons of a general killed at Sedan in the Franco-Prussian War. Paul Margueritte was the first to take up novel writing. His novels are: "Tous Quatre" (1885); "La Confession Posthume" (1886); "Maison Ouverte" (1887); "Pascal Gefosse" (1892); "Jours d'Epreuve" (1889); "Amants" (1892); "Ma Grande" (1892); "La Tourmente" (1894); "L'Essor" (1896); "A la Mer" (1906); "La Flamme" (1909); "La Faiblesse Humaine" (1910); "La Main Brûle" (1913). Victor, some time a cavalry officer, wrote poems and novels before collaborating with his brother. Of his more noted works are "Prostituée" (1907); "Jeunes" (1909); "L'Or" (1910); "Pour Mieux Vivre" (1911); "L'Imprévu" (1911); "Le Journal d'un Mollot" (1912); "La Rose des Ruines" (1913). The brothers wrote together novels of the Franco-Prussian War, notably "Le Désastre." The social position of women was the subject of "Les Deux Vies" (1902). They also wrote a history of the Franco-Prussian War.

MARIA CHRISTINA (mä-rē'ä krēstē'nä), a Queen-Dowager of Spain, daughter of Francis I., King of the Two Sicilies; born in Naples, April 27, 1806. She was married to Ferdinand VII. of Spain in 1829. Ferdinand died in 1833, and by his testament his widow was appointed guardian of her children—the young Queen Isabella and the Infanta Maria Louisa, afterward Duchesse de Montpensier—and also regent, till the young queen should attain the age of 18 years. A civil war broke out, the adherents of Don Carlos seeking to place him on the throne. This was continued until 1840. Maria was married morganatically to Fernando Muñoz. She had 10 children by him. A conspiracy, which broke out on the night of Aug. 13, 1836, exposed Muñoz to great danger, and led the queen-mother to concede a constitution to Spain. A popular commotion, caused by the law respecting the Ayuntamientos, obliged her to give to the prime minister Espartero, Oct. 10, 1840, a renunciation of the regency, and then to retire to France. After the fall of Espartero she returned to Madrid in 1843, and in October, 1844, her marriage with Muñoz, who was now made Duke of Rianzares, was publicly solemnized. In July, 1864, a new revolution expelled her from the country, and she again took refuge in France, but returned to Spain some time after, was again expelled, and died in exile in Havre, France, Aug. 22, 1878.

MARIA CHRISTINA, Dowager-Queen of Spain, born in 1858. She was a daughter of Archduke Karl of Austria. She married in 1879 Alfonso XII of Spain. A son, Alfonso XIII, was born in 1886 after the death of his father. She acted as regent until her son became of age, May 17, 1902, and displayed great ability and tact in carrying on the affairs of the government.

MARIA LOUISA, Empress of the French, second wife of Napoleon I.; born in Vienna, Austria, Dec. 12, 1791. She was the eldest daughter of Francis I., Emperor of Austria, and of his second wife, Maria Theresa of Naples. In 1810 she was married to the emperor, then in the zenith of his power; in 1811 she presented her husband with a son—afterward called King of Rome—to the great joy of the French nation; and, in 1813, on his departure to the army, she was nominated regent. In 1814 she refused coldly to accompany Napoleon to Elba, on the plea of ill-health; and having obtained, by treaty with the allied powers, the duchies of Parma and Placentia, etc., she repaired thither with her chamberlain, Count Neipperg, for whom she had conceived an attachment, and whom she subsequently married. She died in Parma, Italy, Dec. 17, 1847.

MARIAMNE (-am'nē), an unfortunate Jewish princess, granddaughter of Aristobulus and of Hyrcanus the high-priest, and wife of Herod the Great. Her history is related by Josephus in his "Antiquities," commencing at Book XV., from which it appears that Herod was excessively fond of her. She was condemned to death by the machinations of Salome, her husband's sister, on a false charge of adultery, 28 B. C. She met her fate with an air of grandeur and intrepidity worthy of her noble ancestry, and was bitterly lamented by the king after her decease. Another Mariamne, wife of Herod, was the daughter of Simon, the high-priest, and mother of Herod-Philip, who married Herodias.

MARIANNA, county-seat of Lee co., Ark., 43 miles S. W. of Memphis, Tenn.

The chief trade is in cotton, has cotton-seed and lumber plants, and machine tool factories. At the head of navigation on L'Anguille river, and contains a handsome city hall and other buildings. Pop. (1910) 4,810; (1920) 5,074.

MARIANNE ISLANDS. See GUAM: LADRONES.

MARIA THERESA, Queen of Hungary and Bohemia, Archduchess of Austria, and Empress of Germany, daughter of the Emperor Charles VI.; born in Vienna, May 13, 1717. In 1736 she married Duke Francis Stephen of Lorraine, who, in 1737, became Grand-Duke of Tuscany. The day after her father's death, in 1740, she ascended the throne of Hungary, Bohemia, and Austria, and declared her husband joint ruler. The elector, Charles Albert of Bavaria, supported by France, laid claim to the Austrian hereditary territories, and the Elector of Cologne and the Elector-Palatine would likewise not acknowledge her succession. Her states were invaded at the same time by Frederick the Great and by the Elector of Bavaria; and being compelled to fly to Pressburg, she convoked the Diet, and there threw herself on the sympathy of her Hungarian subjects. In the meantime the allies quarreled among themselves, and the King of Prussia made a separate peace with the empress. The general opinion that the balance of power in Europe depended on the continuance of the house of Austria, induced England to arm for Maria Theresa; Holland paid her subsidies; and after the death of Cardinal Fleury, in 1743, the cause of Austria triumphed throughout Europe. Reverses, however, followed; and all the belligerents becoming desirous of peace, the treaty of Aix-la-Chapelle was concluded in 1748, by which Maria Theresa was secured in her rights. In 1756 Frederick the Great began the Seven Years' War. In 1765 the Emperor Francis died. In 1772 she joined the King of Prussia and the Empress Catharine in the dismemberment of Poland. By the death of Maximilian Joseph, Elector of Bavaria, in 1777, war was rekindled between Austria and Prussia, but was terminated in 1779, by the peace of Teschen, which added to the former state a small portion of Bavaria. Maria Theresa introduced many social and political reforms. She died in Vienna, Nov. 29, 1780.

MARIAZELL (mä-rē-ä-tsel'), the most famous place of pilgrimage in Austria, in the extreme N. of Styria, 60 miles from Vienna. It is visited by thousands of pilgrims annually, besides numerous visitors attracted by its romantic scenery. The image of the Virgin (brought here in 1157), the object of the pilgrimages, is enshrined in a magnificent church, built in 1644 on the site of an older one.

MARIE, ADELAIDE THERESE HILDA ANTOINETTE WILHELMINE, Grand-Duchess of Luxemburg; born in 1894, granddaughter of Adolphus of Nassau, who became Grand-Duke of Luxemburg in 1890. There being no male heir she succeeded her father, Grand-Duke for seven years, who died in 1912. She is also the granddaughter of Dom Miguel, of Portugal. The Duchess Marie strongly objected to the violation of the neutrality of Luxemburg by the Germans in 1914, and was said to be in favor of armed resistance. She abdicated in favor of her sister in 1919. See LUXEMBURG.

MARIE ANTOINETTE (*ong*-twä-net'), Queen of France; born in Vienna, Austria, Nov. 2, 1755. She was the



MARIE ANTOINETTE

daughter of the Emperor Francis I. and the celebrated Maria Theresa. She left Vienna for Versailles in 1770, when

only 15 years of age, to give her hand to the young Duke of Berri, afterward Louis XVI. of France. She constantly opposed such measures of reform as had been proposed. Her unpopularity increased, and the general indignation was raised to the highest pitch by the enthusiastic reception given her at the guard's ball, on Oct. 1, 1789, where the white Bourbon cockades were worn, and the national cockade was trampled under foot. The insurrection of women and the attack on Versailles followed in a few days. The queen displayed such courage that she won the plaudits of the mob. It was the queen who advised the flight of the royal family from Paris in June, 1791, which ended in their capture and return.

The queen exerted all her power to induce the king to meet death sword in hand; but he thought resistance was in vain, and was led with his consort before the Legislative Assembly, where she heard his deposition announced, and then accompanied him to the prison of the Temple. There she again showed the highest courage. In August, 1793, she was removed to the Conciergerie, and in October she was brought before the revolutionary tribunal. She replied with firmness and decision to the charges brought against her; and she heard her sentence pronounced with perfect calmness. She was executed on Oct. 16, 1793.

MARIE DE MEDICI (duh mā-di-sē'), Queen of France; born in Florence, Italy, April 26, 1573. She was daughter of Francis I., Grand-Duke of Tuscany, and married Henry IV. of France in 1600. The union was rendered unhappy in consequence of the jealous, obstinate, and violent character of the queen. On the death of Henry IV., in 1610, she was named regent; but her administration was disgraced by the countenance she afforded to unworthy favorites. She even quarreled with her son, afterward Louis XIII., who was compelled to quit the court. A reconciliation was, however, effected between them by Richelieu. That minister subsequently forced her to leave France. The remainder of her life was spent in exile. She died in Cologne, July 3, 1642.

MARIE GALANTE (gä-lo*ngt*'), a French island in the West Indies, 17 miles S. E. of Guadeloupe; area, 58 square miles; it is covered for the most part with wood and surrounded by coral reefs; sugar, coffee, cocoa, and cotton are exported. Discovered by Columbus in 1493. Chief town, Grandbourg, or Marigot, on the S. W. coast. Pop. about 15,000.

MARIENBAD (mä-rē'en-bäd), a city of Czecho-Slovakia, 47 miles N. W. of Pilsen, at an elevation of 2,057 feet above sea-level. The springs have long been used by the people of the vicinity, but it is only since 1807-1808 that it has become a place of resort for persons from distant parts of the world. The springs are numerous, varying in temperature from 48° to 54° F. They are saline, containing sulphate of soda and various alkaline ingredients, but differing considerably in their composition and qualities. They are used both internally and in the form of baths. Great quantities of the waters of the springs are exported to many parts of the world. Pop. about 7,500.

MARIENBURG (mä-rē'en-börg), a town of Prussia, on the Nogat, 30 miles S. S. E. of Danzig. It was long the seat of the Grand Masters of the Teutonic Order, who removed from Venice hither in 1309. The fortress of the knights, however, was founded here about 1274. Marienburg remained in their hands till 1457, when it was taken by the Poles, and by them it was held till 1772. The castle, in which 17 grand masters resided, a noble edifice in a style of Gothic peculiar to the vicinity of the Baltic, was thoroughly restored in 1817-1842. Pop. about 7,000.

MARIENWERDER, a town of West Prussia, 3 miles E. of the Vistula and 55 S. of Danzig; was founded in 1233 by the Teutonic Knights and has an old castle. Pop. about 15,000.

MARIETTA, city of Cobb co., Ga., 20 miles N. W. of Atlanta, on the Louisville and Nashville railroad. The Kenesaw mountain rises 2½ miles away. Contains large library, court house, and collegiate institutions, and has mills, foundries, marble works, and paper factories. A national cemetery is located there. Pop. (1910) 5,949; (1920) 6,190.

MARIETTA, a city and county-seat of Washington co., O.; on the Ohio river, at the mouth of the Muskingum river, and on the Baltimore and Ohio, Pennsylvania, and Marietta, Columbus and Ohio railroads, 80 miles S. E. of Zanesville. It was settled by Gen. Rufus Putnam and a colony from New England in 1788. It is the seat of Marietta College and is situated near a series of prehistoric mounds. It contains electric light and street railroad plants, a high school, National and State banks, and daily and weekly newspapers. It has an extensive river commerce and manufactories of flour, cars, tanned leather, carriages, boats, furniture, refined petroleum, etc. Pop. (1910) 12,923; (1920) 15,140.

MARIETTA COLLEGE, a coeducational non-sectarian institution in Marietta, O.; founded in 1835; reported at the close of 1919: Professors and instructors, 17; students, 300; volumes in the library, 82,000; productive funds, $591,183; grounds and buildings valued at $120,000; income, $76,540; endowments, $726,740; president, Dr. E. S. Parsons.

MARIGOLD, a name of several composite plants. The common marigold (*Calendula officinalis*) is a native of France and of the more S. parts of Europe. It is an annual, from one to two feet high, with large deep-yellow flowers. A number of species of this genus are indigenous to the Cape of Good Hope. The so-called African marigold and French marigold, common in flower borders, are both Mexican species, and have brilliant flowers. They belong to the genus *Tagetes*. The corn marigold is *Chrysanthemum segetum;* the fig marigold is a *Mesembryanthemum*, the marsh marigold is *Caltha palustris*.

MARINDUQUE, one of the Philippine Islands, in the Visayan Sea. It has an area of 667 square miles. The interior contains some large forests with good grazing grounds. The principal industries are cattle raising and the cultivation of rice and hemp. The inhabitants consist mostly of Tagalogs. In 1902 the island was annexed to the island of Mindoro. Pop. about 52,000.

MARINE ARCHITECTURE. See SHIPBUILDING.

MARINE BIOLOGICAL LABORATORY, a government experiment station maintained at Woods Hole, Mass.

MARINE CORPS. See NAVY, UNITED STATES; MARINES.

MARINE ENGINEERING. Marine engineering is that branch of the science of engineering which has to do with all ship machinery. Originally a marine engineer was the one who designed and installed the propulsive machinery of the ship, in contrast to the naval architect who designed the ship itself, but now the profession of marine engineering is understood to include the designing and installation of all ship machinery, propulsion engines, boilers, propellers, reduction, reduction gears for turbine drives, electrical systems, refrigerating systems, pumps, winches, booms, freight handling devices of all types, and control systems.

The desire to use power for the propulsion of vessels long preceded its successful accomplishment. There are now in existence many early plans, but most of them remained on paper, largely because a suitable engine did not exist. Paddle wheels, attached to various parts of the boat, and even screw propellers, were suggested by the early inventors. A Frenchman, Papin of Blois, about 1707 constructed and navigated with indifferent success a boat propelled by steam, and about seventy years later a boat designed by the Marquis de Jouffroy operated on the Saone for about a year and a half. The introduction of the double-acting steam engine by Watt in 1782 furnished the necessary power, which had heretofore been lacking, and caused several experimental steamboats to be constructed. A stern-wheeled boat built by John Fitch, which in 1788 ran from Philadelphia to Burlington at a sustained rate of speed of over six miles per hour, may be considered the first successful application of steam power to navigation, and the "Clermont," a side-wheeled boat built under the direction of Robert Fulton in 1807, which plied between New York and Albany, was the first successful commercial application of this venture.

The side-wheel type of ocean vessel began to give way to screw-propelled vessels about 1850 because, in the case of merchant vessels, the screw allowed a greater variance in depth than did the paddle wheels.

In the struggle for decrease of weight in ratio to horse power, the compound and the triple and quadruple expansion engines were introduced. Modern practice has displayed a distinct leaning toward the turbine engine for steamship propulsion. In many modern ships, oil is used for fuel in place of coal, because it is more easily handled and stowed than is coal.

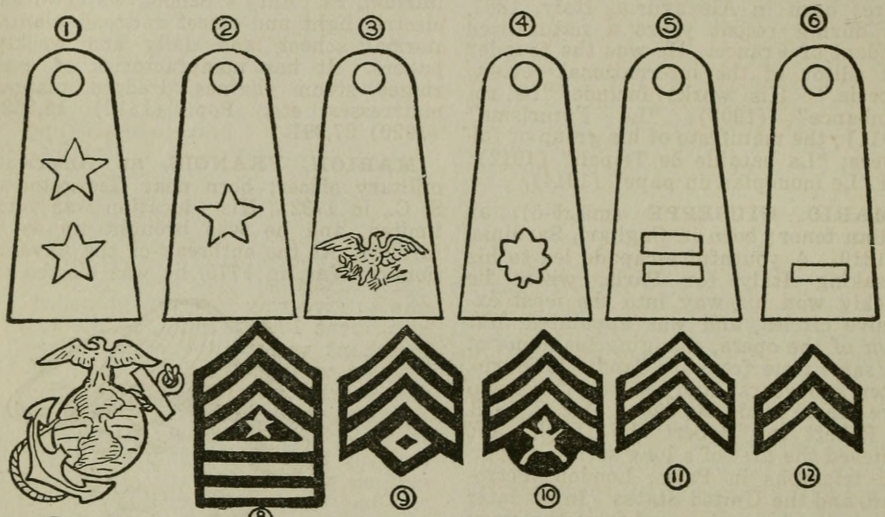
Because a turbine will operate economically only at high speed, various methods, such as gearing and electric dynamo-motor sets, are employed to secure the proper propeller speed.

When the United States entered the Great War and determined to put shipbuilding upon a quantity production basis, standardization of marine machinery was found to be the only possible solution of this phase of the problem and so, as was the case in other war industries, the problem of the marine engineer during the period of the war was the increase of production rather than the improvement of design.

MARINE INSURANCE, the most ancient form of insurance against loss. Even in the days of antiquity it was customary for merchants to discount their chances of successful voyages with their colleagues. In the Middle Ages, begin-

ning in the 13th century, it was practiced in a similar manner by Portuguese and Flemish shipowners and merchants. England, which now leads all other countries in this form of enterprise, began the practice of insurance against the loss of shipping in the 16th century. Notable in the history of marine insurance was the formation of Lloyd's Association, in London (ab. 1688), incorporated by Act of Parliament in 1871, an insurance underwriters' exchange, which has become especially famous on account of its extensive and accurate system of reporting sels long overdue, when underwriters are sometimes willing to chance the possibility that it has simply been delayed by adverse winds.

MARINES, troops enlisted for service either on board ship or on shore. They are drilled, disciplined, clothed, equipped, and paid similarly to the land forces. Their duties are to maintain the necessary guards, man some of the guns, form part of the armed crews of the various boats when called away for service, and form a permanent force for landing with



MARINE CORPS INSIGNIA

1. Major-General Commandant
2. Brigadier-General
3. Colonel
4. Lieut.-Colonel (Silver Leaf); Major (Gold Leaf)
5. Captain
6. 1st Lieutenant (Silver Bar); 2d Lieutenant (Gold Bar)
7. Corps Insignia
8. Drum Major
9. First Sergeant
10. Gunnery Sergeant
11. Sergeant
12. Corporal

the movement of world shipping. In the United States the first corporation to take up marine insurance was the Insurance Company of North America, established in 1825. A new development in marine insurance was the action of the United States Government when it, after the outbreak of the World War, in 1914, undertook to assume such risks as were refused by the private underwriters, through an Act of Congress, signed on Aug. 19, 1914. This War Risk Bureau, under the jurisdiction of the Treasury Department, granted policies to American vessels entering within the war zone. Congress granted it an appropriation of $5,000,000 with which to begin its operation. Policies on shipping are usually for voyages, though in some cases time policies are also granted. Often additional insurance may be taken out on ships already lost, as in the case of ves-

the seamen if necessary. In all these matters they are commanded by their own officers. The marines of the European continental nations are not designed for service permanently on board ship; the American navy is the only one besides that of England in which the marine forms a necessary and definite fraction of ship's company. United States marines distinguished themselves in the World War. First on June 6, 1918, when they helped the French check the German advance near Château-Thierry and advancing 2 miles on a 3-mile front, captured and held Torcy and Bouresches against strong counter-attacks. In the Battle of the Oise, June 10-11, they captured a German strong point, Belleau Wood.

MARINETTE, a city and county-seat of Marinette co., Wis.; on Green Bay, at

the mouth of the Menominee river, and on the Chicago and Northwestern, the Wisconsin and Michigan, and the Chicago, Milwaukee, and St. Paul railroads; 49 miles N. by E. of Green Bay. There are hospitals, public library, electric light and street railroad plants, waterworks, National banks, more than 20 churches, and daily and weekly newspapers. It has iron works numerous lumber and paper mills. Pop. (1910) 14,610; (1920) 13,610.

MARINETTI, FRANÇOIS, Italian poet, and apostle of "futurism" in literature; born in Alexandria, Italy, 1881, but during recent years a naturalized resident of France. He was the founder and editor of the international review, "Poesia." His works include "Le roi Bombance" (1905); "Le Futurisme" (1911); the manifesto of his group of followers; "La bataille de Tripoli" (1912); and "Le monoplan du pape" (1914).

MARIO, GIUSEPPE (mä'rē-ō), an Italian tenor; born in Cagliari, Sardinia, in 1810. A youthful escapade led to his forsaking Italy for Paris, where he quickly won his way into the most exclusive circles, and was appointed first tenor of the opera, changing his name at the same time from De Candia to Mario. After two years' study at the Conservatoire Mario made his début, Dec. 2, 1838, as Robert in "Robert the Devil," and achieved the first of a long series of operatic triumphs in Paris, London, Petrograd, and the United States. In his later years after his retirement from the stage he lost his fortune through disastrous speculations. He died in Rome, Dec. 11, 1883.

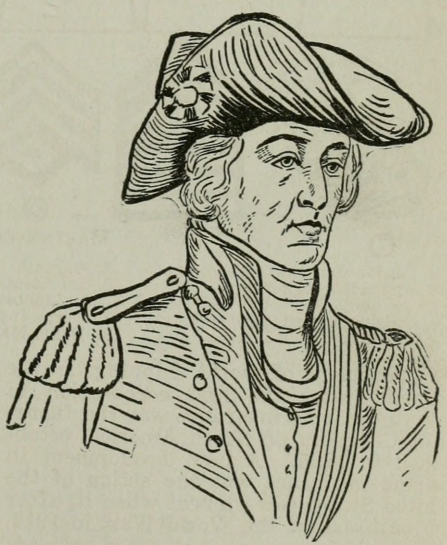
MARION, county-seat of Williamson co., Ill., on Illinois Central railroad, 18 miles E. of Carbondale. It is a shipping point for grain, tobacco, and live stock, and the products of its factories include shoe machinery, gloves, and bric-à-brac. Coal mines in neighborhood. Pop. (1910) 7,093; (1920) 9,582.

MARION, a city and county-seat of Grant co., Ind., on the Mississinewa river and on the Cleveland, Cincinnati, Chicago and St. Louis, the Pittsburg, Cincinnati, Chicago and St. Louis, the Toledo, St. Louis and Western and the Chesapeake and Ohio railroads, 68 miles N. E. of Indianapolis. There are a normal college, a National Home for Disabled Veteran Soldiers, a public library, waterworks, National banks, street railroad and electric light plants, and daily and weekly newspapers. It has rolling and malleable iron mills, manufactories of glass, etc. Pop. (1910) 19,359; (1920) 23,747.

MARION, a city and county-seat of Linn co., Iowa, on the Chicago, Milwaukee and St. Paul railroad, 6 miles N. E. of Cedar Rapids. Its industrial establishments include railway shops, and its factories turn out flour, cigars, and brooms. Pop. (1910) 4,400; (1920) 4,138.

MARION, a city and county-seat of Marion co., O.; on the Cleveland, Cincinnati, Chicago, and St. Louis, the Hocking Valley, the Erie, and the Pennsylvania railroads; 45 miles N. of Columbus. It contains a public library, Sawyer Sanitarium, St. Mary's School, waterworks, electric light and street railroad plants, normal school, and daily and weekly papers. It has manufactories of carriages, steam engines, dredges, pianos, mattresses, etc. Pop. (1910) 18,232; (1920) 27,891.

MARION, FRANCIS, an American military officer; born near Georgetown, S. C., in 1732. His education was very limited, and he was brought up as a farmer. At the outbreak of the Revolutionary War, in 1775, he was elected to



GENERAL FRANCIS MARION

Congress, but shortly afterward obtained the command of a company in the regiment of Col. William Moultrie, taking a conspicuous part in the capture of Fort Johnson and in the defense of the forts at Dorchester and Sullivan's Island. In 1777 he was dispatched with 600 men to the defense of Georgia, where he served till that State was overrun by the British. During the time that elapsed after the ill-advised attack of the American forces on Savannah, and the subsequent

capture of Charleston, S. C., by the British, Marion, now an invalid, owing to the accidental breaking of a leg, was conveyed from place to place to avoid capture. But when he grew able for service, he gathered a band of young patriots about him, and formed that brigade which afterward became famous for its exploits. He disbanded his brigade in 1782. He died in Pond Bluff, S. C., Feb. 27, 1795.

MARIPOSA GROVE, tract of land in Cal., famous for its sequoias.

MARIS, JAKOB (mä'ris), a Dutch painter; born in The Hague, Aug. 25, 1837. He studied in France, and was one of the greatest modern Dutch painters of landscape and genre. He died in Carlsbad, Aug. 8, 1899. Less famous was his brother MATTHIJS (born 1839; settled in London), a genre painter; a younger brother WILLEM (1844-1910) was a landscapist.

MARITIME ALPS. See ALPES-MARITIMES.

MARITIME LAW, the system of law governing the operations of navigation and trade on the sea or inland waters. The laws of the sea are largely based on practices that were in vogue on the Mediterranean in Roman times and grew into established usages during the period of medieval commerce. The ordinances, customs, and usages which received the recognition of the Hanseatic League, and the marine ordinances of Louis XIV., had great influence in determining the shipping laws that were to prevail in later times.

In England maritime law has developed from the decisions of the courts of admiralty jurisdiction, and these, with the decisions of the Federal courts of the United States, are the basis of the maritime law of the United States. Damages committed in the course of trade and navigation on navigable waters are the proper subject matter of maritime law, and the test for deciding whether a tort or common-law wrong is of a maritime nature is the place where the act has been committed. Maritime law may enforce contracts, and may give decisions in prize causes during time of war.

MARITIME PROVINCE (*Primorskaya Oblast*), a province of Russia which, when it included Kamchatka Peninsula, Northern Sakhalin, and some islands, had an area of over 700,000 square miles. A rearrangement of boundaries resulted in this division—Primorskaya Province: area, 266,486 square miles; pop., 631,600. Kamchatka Province: area, 502,424 square miles; pop., 41,400. Sakhalin Province: area, 14,688 square miles; pop., 34,000. The entire area in question extends from Korea to the Arctic Ocean. Agriculture is carried on in Primorskaya Province, and the Amur and Usuri rivers afford excellent fishing for an increasing population. Capital, Khabarovsk; chief city, Vladivostok.

MARITZA (mä-rēt'sä) (ancient Hebrus), a river of European Turkey, rising in the Balkans, and flowing E. by S. past Philippopolis to Adrianople, where it bends and flows S. by W. to the Gulf of Enos in the Ægean; length 270 miles; it is navigable for small boats to Adrianople.

MARIUPOL (mä-rē-ō'pol), the seaport for the S. Russian coalfield, on the Sea of Azov, 65 miles W. of Taganrog; it was founded in 1779 by Greek emigrants from the Crimea, and exports coal, wheat, linseed, etc. Pop. about 53,000.

MARIUS, CAIUS (mā'ri-us), a Roman soldier; born near Arpinum, Italy, about 155 B. C. Having entered the army, he became known to Scipio Africanus, and acquired so much repute that he was elected tribune 119 or 120 B. C., prætor 116, and governor of Spain, 115. In 109 he joined Metellus as one of his lieutenants in the Jugurthine War, and two years afterward supplanted him in the command of the army. He brought the war to a close in 106, when Jugurtha, King of Numidia, was treacherously delivered into his hands by his ally, Bocchus. Marius remained in Africa a year longer, and was then recalled to take the field against the Cimbri and Teutones, at that time menacing the Roman empire. In 102 he defeated the combined forces of the Ambrones and Teutones, near Aix; and in 101, having joined his forces with those of Catulus, he obtained an equally decisive victory over the Cimbri in the neighborhood of Vercellæ. He was now hailed "The Third Founder of Rome" and rewarded with a fifth consulate—followed by a sixth, which, it is said, was gained by corrupt practices. Marius was the avowed chief of the plebeians, and Sulla became chief of the patricians. The latter, flushed with his recent success against the army of Mithridates, refused to yield the command to Marius, but marched against his party in the capital and disputed the city street by street. Marius was defeated, and finally lodged in prison. He escaped and sought refuge in Africa, from whence, in 87 B. C., he was recalled by Cinna, at that time consul, to take arms against his old adversary. The combined forces of Marius, Cinna, Sertorius, and Carbo soon en-

tered Rome, and the bloody proscriptions which have consigned the name of Marius to infamy, now took place. Caius Marius now served as consul for the seventh time, with his new ally; and the same year, 86 B. C., he died.

MARK, the evangelist whose name is prefixed to the second Gospel. He was almost certainly the same as the "John whose surname was Mark," mentioned in Acts xii: 12, 25. The name John was Jewish; Mark (Marcus) was Roman. John Mark's mother lived at Jerusalem, her house being a resort of Christians (Acts xii: 12). He was nephew, cousin, or other relative of Barnabas (Col. iv: 10). On the first missionary journey of Paul and Barnabas, he went as their minister, but, while they were at Perga, left them, and returned to Jerusalem (Acts xii: 25; xiii: 13). Paul considered him fickle, but ultimately Mark gained anew the good opinion of the apostle, and attended on him during his final imprisonment (Col. iv: 10; Phil. 24). We read of him as being with Peter "at Babylon" (I Pet. v: 13). Afterward Paul desired his return to Rome (II Tim. iv: 11). Tradition is scanty and contradictory as to his subsequent career.

The Gospel according to St. Mark: The second of the Gospels, almost universally attributed to the John Mark of this article. The writer was evidently a Jew, or at least familiar with Judea; but his Gospel was specially designed for the Gentiles. Except in recording the discourses of Jesus, he nowhere shows that any incident narrated fulfilled Old Testament prophecy, and the term "law," in the sense of the Mosaic law, nowhere occurs. Statements likely to give offense to the Gentiles are also omitted (see Matt. x: 5, 6, and Mark vi: 7-11). His Gospel seems to have been written at Rome, though there are a few suffrages in favor of Alexandria. If addressed especially to any Gentile nationality, it was to the Romans. Mark records the miracles more than the discourses of Jesus. His style is more precise and graphic than that of the other evangelists. The language approaches more closely to that of Matthew than to that of Luke. The last 12 verses of Mark (xvi: 9-20) are of doubtful authenticity. External testimony is perhaps slightly in their favor, but internal evidence is strongly against them; hence, in the Revised Version, they are separated by an interval from the rest of the book.

MARK, a Pope and saint, succeeded Sylvester I. in 336, and died the same year. There passed under his name an epistle addressed to St. Athanasius.

MARK, a silver coin of Germany.

MARKETS. See FOOD.

MARKHAM, (CHARLES) EDWIN, an American poet; born in Oregon City, Ore., April 23, 1852; settled in California in 1857, and worked there during boyhood principally as a blacksmith. He worked his way through the San José Normal School and Santa Rosa College; became a writer of verse and stories for papers and magazines, and principal and superintendent of California schools. He was the author of "The Man with the Hoe, and Other Poems" (1899); "The Man with the Hoe, with Notes by the Author" (1900); "The End of the Century" (poem 1899); "Lincoln, the Great Commoner" (1900); "The Mighty Hundred Years"; "Lincoln and Other Poems" (1901); "The Poetry of Jesus" (essays) (1909); "The Shoes of Happiness and Other Poems" (1914); "California the Wonderful" (1914).

MARKHAM, SIR CLEMENTS ROBERT, an English geographer; born in Stillingfleet, England, July 20, 1830. He accompanied an Arctic expedition in 1851; visited Peru in 1852-1854; visited Peru and India as commissioner to introduce cinchona plants into the latter country in 1860; was secretary of the Royal Geographical Society in 1863-1868; accompanied the Abyssinian expedition in 1867-1868. He wrote: "Travels in Peru and India" (1862); "History of the Abyssinian Expedition" (1869); "History of Peru" (1892); "Richard III" (1906); "The Incas of Peru" (1910). He edited a number of reprints of works on South America for the Hakluyt Society, and, for several years, the "Geographical Magazine." He was president of the Royal Geographical Society and of the International Geographical Congress (1894-1899), and was created a K. C. B. in 1896. He died in 1916.

MARK TWAIN. See CLEMENS, SAMUEL LANGHORNE.

MARL, a mixture, naturally existing, of clay, and carbonate of lime. Marls are found in very different geological formations, but everywhere seem to owe their origin to deposition by water. The name is sometimes applied to friable clays, or mixtures of clay and sand, in which there is almost no trace of lime; but the presence of a notable proportion of carbonate of lime is essential to marls, properly so called. This proportion varies from 6 to 20 per cent. Marly soils are in general of great natural fertility. Marl is very advantageously used as a manure; acting both chemically and mechanically;

but different kinds of marl are of very different value in this respect. The use of marl as a manure has been practiced from ancient times.

MARLBOROUGH, a city in Middlesex co., Mass., on the New York, New Haven, and Hartford, and the Boston and Maine railroads; 30 miles W. of Boston. It contains a city hospital, public library, St. Ann's convent and school, high school, soldiers' monument, Grand Army of the Republic Building, waterworks, National banks, and street railroad and electric light plants; and has extensive boot and shoe, box, automobile and carriage factories, and electrical supply works. Pop. (1910) 14,579; (1920) 15,028.

MARLBOROUGH, a provincial district of New Zealand, in the N. E. corner of the South Island, 130 miles long by 30 broad; area, 3,000,000 acres, of which 200,000 are agricultural land and 1,300,000 suitable for pastoral occupation. There are important dairying and lumbering industries. Among the minerals are gold, antimony, copper, and coal. Pop. about 17,000.

MARLBOROUGH, JOHN CHURCHILL, DUKE OF, an English soldier and statesman; born in Ashe, Devonshire, England, June 24, 1650. He was the son



JOHN CHURCHILL, DUKE OF MARLBOROUGH

of Sir Winston Churchill, a devoted adherent of Charles I. After receiving a defective education he was placed, at the age of 12, as page in the household of the Duke of York. Continuing in the service of the Duke of York, Churchill married, about 1680, the beautiful and accomplished Sarah Jennings, favorite of the Princess (afterward Queen) Anne. At the revolution Churchill entered the service of the Prince of Orange. He was created Earl of Marlborough and privy councillor. In 1689 he received the command of the English forces in the Netherlands, and after a brief service in Ireland was recalled to Flanders in 1691. Suspected of a traitorous correspondence with James II., he was deprived of his command and imprisoned in the Tower; and though shortly released was not restored to the favor of the king till 1697. On the breaking out of the War of the Spanish Succession, in 1700, he received the chief command of the forces in the United Provinces, and was named ambassador to France. As commander-in-chief of the allied forces he took several places in the Netherlands in 1702; for which exploits he was made duke. With the Imperialists, under Prince Eugène gained the victory of Blenheim in 1704, for which a sum was voted to build him the palace of Blenheim on the demesne of Woodstock, which had been bestowed on him by Queen Anne. Marlborough afterward defeated Marshal Villeroi at Ramillies in 1706, and closed the brilliant series of his victories by those of Oudenarde in 1708, and Malplaquet in 1709. He became unpopular for political and personal reasons, and in 1712 he went abroad with his duchess, who had also been displaced at court. Returning in 1714, George I. restored him to his office, but he was soon after compelled by an attack of apoplexy to withdraw from public life, and he died at Windsor Lodge, June 16, 1722.

MARLITT, EUGENIE, the pseudonym of E. JOHN, a German novelist; born in Arnstadt, Thuringia, Dec. 5, 1825. After some years on the stage she spent her time in writing romances, interesting enough, but with strong didactic tendencies and somewhat unreal. Of these the most successful was "Goldelse" (1866); "The Old Maid's Secret" (1867); "Princess of the Moor" (1871); "Second Wife" (1873); "Countess Gisela" (1869), and "Thuringian Stories" (1869). She died in Arnstadt June 22, 1887.

MARLOWE, CHRISTOPHER, an English dramatist; born in Canterbury about 1564. Soon after graduating at Cambridge (1583), he became dramatist to the "Lord Admiral's Company," London, which produced most of his plays. Among them were the tragedies "Life and Death of Dr. Faustus" (1601); "The Jew of Malta"; and "Edward II." (1593),

his best work. Many believe him to have been the author of the second and third parts of Shakespeare's "Henry VI." He wrote also the first part of a narrative poem, "Hero and Leander," completed afterward by George Chapman. He died June 1, 1593.

MARLOWE, JULIA, an American actress; born in Caldbeck, England, Aug. 17, 1870; came with her parents to the United States in 1875; joined the Juvenile Opera Company in 1882, and played in "Pinafore," "Chimes of Normandy," etc., in which she was known as Frances Brough; subsequently she took a child's part in "Rip Van Winkle." Afterward she studied in New York for three years and then appeared on the metropolitan stage as Parthenia in "Ingomar." In 1888 she began to star in Shakespearean and other romantic and tragic rôles in the United States and became one of the most popular artists on the American stage. She married, in 1894, Robert Taber, but divorced him in 1899. In 1918 she married Edward H. Sothern, with whom she had acted as co-star for several years preceding. With her husband she toured the United States annually in Shakespearean repertoire. She retired from the stage in 1914, but in 1920, with her husband, again played Shakespearean rôles in the United States. From an artistic standpoint the Sothern-Marlowe productions were the most notable of their time.

MARMALADE, a semi-liquid preserve, made by boiling the pulp of thick-rinded fruits, such as oranges, pineapples, quinces, etc., with portions of the rind. The most common kind of marmalade is made from the bitter or Seville oranges, the common or sweet sorts being considered inferior for this purpose, though also occasionally used. The woolly coating on the interior being removed, the rind is cut up into thin strips, and boiled along with the expressed juice of the pulp and a quantity of sugar equal in weight to the other ingredients.

MARMORA, or **MARMARA** (mär'-) (ancient Propontis), a small sea between European and Asiatic Turkey, communicating with the Ægean Sea by the Strait of the Dardanelles (anciently Hellespont), and with the Black Sea by the Strait of Constantinople (anciently Bosporus). It is of an oval form, and about 135 miles in length, by 45 in breadth, but has, besides, a large gulf, the Gulf of Isnikmid, or Ismid, which extends about 30 miles E. into Asia. Its depth is great. There is a current from the Bosporus through it and the Hellespont to the archipelago; but its navigation is by no means difficult. During the World War the Sea of Marmora had great strategic value, as the only means of procuring supplies from Russia. To open this route the disastrous attempt to open the Dardanelles to the Allies was largely due.

MARMOSET (-set'), the platyrhine genus *Hapale*, from the tropical region of South America. *H. Jacchus* is the common marmoset, which is readily tamed, and becomes an amusing pet. The fur of the body is darkish-brown, with different shades of color for each hair, which is dusky at the root, reddish in



MARMOSET

the middle and gray at tip. The head is small, the nose flat, the face black, with a long tuft of white hair sticking out from each side. The tail is long and bushy, marked with alternate rings of ash-color and black. *H. humeralifer* is the cloaked marmoset. The fore part of the body is white; the hands gray; the rump and underside deadish-tawny; tail banded with gray and black. Called also ouistiti.

MARMOT, a popular name for any individual of the genus *Arctomys*, but more particularly confined to *A. marmota*, the common or Alpine marmot, of the higher regions of the Alps, Pyrenees, and Carpathians. It is about 20 inches in length; dark brown above, and lighter

below. The hoary marmot, an American species, ranging as far N. as the Arctic Circle, is *A. pruinosus*. Marmots live in



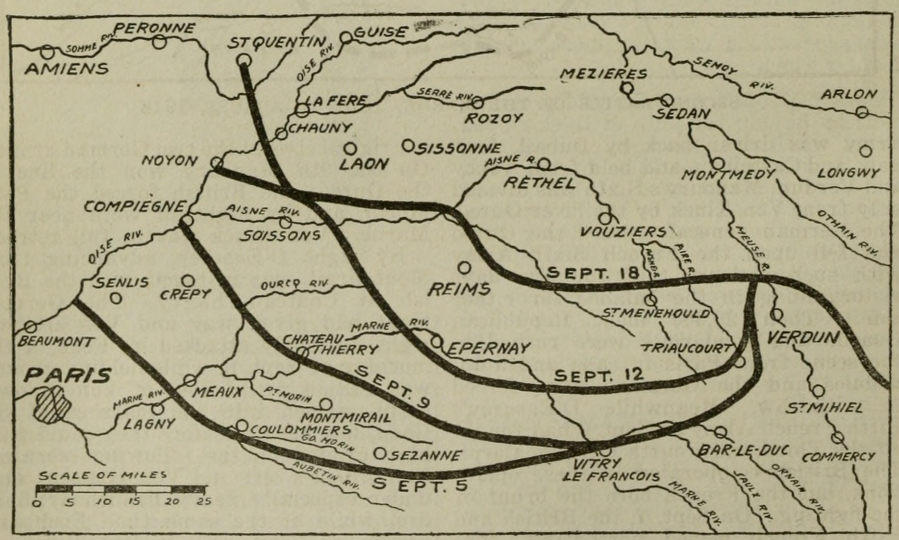
MARMOT

large societies in extensive burrows. They are very active in the summer, and pass the winter in a state of torpidity.

MARNE, a river of France, the most considerable tributary of the Seine, rising in the plateau of Longres, flowing N. W. past Châlons to Epernay, thence W. and joining the Seine at Charenton, a few miles above Paris; length, 326 miles; is navigable for 126 miles up to St. Dizier. It is connected by canals with the Rhine, the Aisne, and the Seine. See MARNE, BATTLES OF THE.

MARNE, a department in the N. E. of France, formed out of the old province of Champagne, traversed by the river Marne, and to a less extent by the Seine and the Aisne; area, 3,167 square miles; pop. about 450,000. It is in the dry and chalky soil of the N. that the best varieties of champagne are grown, of which two-fifths are exported. The rearing of sheep is an important industry, and extensive woolen manufactures are carried on; cereals, beet root, and potatoes are grown; honey and wax are produced; building stone is quarried; and metal works, tanneries, etc., are in operation. See MARNE, BATTLES OF THE.

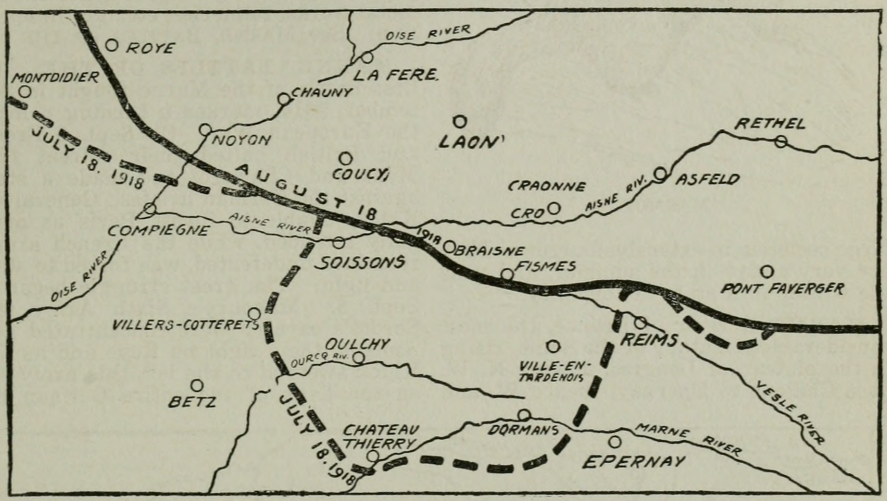
MARNE, BATTLES OF THE. The first Battle of the Marne fought in September, 1914, marked a turning point in the European War. On Sept. 6 French and British halted their retreat from Mons and Charleroi and made a stand against the German armies. General von Kluck, unable to invest Paris as originally intended, while the French armies remained undefeated, was forced to stand and fight. The great struggle began on Sept. 6. Manoury's Sixth Army with Sordet's cavalry were concentrated near Amiens, their right on Roye and as Von Kluck swerved to the left this army was on the flank of the entire German line



FIRST BATTLE OF THE MARNE, SEPTEMBER, 1914

extending to Verdun. Next to the Sixth French Army were the British and then the Fifth French Army under D'Esperey, of four corps, with Conneau's cavalry between. The three armies operated together on Sept. 6. against the First (Von

Kluck's) and the Second (Von Bülow's) Armies. A Ninth French Army under General Foch occupied the center of the line, joining Langle de Cary's Fourth Army eastward, where they were opposed by the Third Saxon and the Duke of Württemberg's Fourth Army. Farther east beyond the plain of Châlons were the Third French (Sarrail), Second (Castelnau), and First (Dubail) facing the Crown Prince of Prussia, the Crown Prince of Bavaria, and General von Heeringen. The Prussian Crown Prince's



SECOND BATTLE OF THE MARNE, JULY TO AUGUST, 1918

army was driven back by Dubail, Sarrail, and Castelnau, and held from Nancy and Verdun. Manoury's Sixth was divided only from Von Kluck by the river Ourcq. The German general crossed the Ourcq and fell upon the French Sixth Army with such violence that for two days victory hung in the balance for either side. Then 20,000 men, Republican Guards and gendarmes were rushed to the scene from Paris in cabs and automobiles and the Germans were forced to withdraw. Meanwhile D'Esperey's Fifth French Army on Sept. 6 had fought off the Third and Fourth German Corps. The British co-operated in these operations, but the French bore the brunt of the fighting. On Sept. 7, the British and Fifth French moved northward. The Sixth French Army still struggled on the Ourcq. The Fifth drove the Germans back to the Petit Morin river. Foch's army held ground, fighting hard. The French on the 8th advanced to Château-Thierry to reach the Marne river. The entire German right was in retreat. Von Kluck's frontal movement against his right between the two German armies. On the 9th Manoury won the line of the Ourcq; the British forced the Petit Morin, and by nightfall were near the Marne. Von Kluck was in full retreat.

By night D'Esperey, advancing from Montmirail, was in touch with the British at Château-Thierry. The German right had given way and Von Bülow's right, furiously attacked by Foch in the morning of Sept. 9, while holding ground was still in peril. Two of Von Bülow's corps, driven into the marshes of St. Gond, lost heavily before they could gain high ground on the following morning. Von Bülow's left and Von Hausen came under especially heavy French artillery fire, while at the same time Foch and Langle de Cary made violent direct attacks. Von Bülow was driven several miles toward Epernay and Von Hausen almost to Châlons. The Germans had now received reinforcements and their defense stiffened, but nothing could check seriously the Allies' drive. By night on Sept. 10 the battle was in its last throes. General Foch was near Châlons and

General Langle de Cary occupied Vihy. Foch pushed on and entered Châlons. Manoury's Sixth French Army was moving along the right bank of the Ourcq toward Compiègne, driving Von Bülow almost to Rheims. On Sept. 12 the Germans had reached their prepared positions on the Aisne river.

The first Battle of the Marne was more of a moral victory for the Allies than a material one. It gave them time to prepare and forever shattered German hopes of a swift victory over France on which they had counted.

The second Battle of the Marne began on July 15, 1918, when General Foch's drive against the Germans was under way, culminating in their collapse. The Americans attacking at Vaux northwest of Château-Thierry at first lost ground and then drove the enemy across the Marne. On July 16 the Germans developed their positions on the south bank of the Marne east of Mazy and south of Dormans. Penetration at Bligny was developed by the Allies south to the Marne. July 18-23 French and American detachments under General Mangin attacked the right wing of the Prussian Crown Prince between Soissons and Château-Thierry on a 28-mile front with a penetration of 6 miles as far as the river Crise. The Allies saved the plateau of Soissons and recovered the entire sector northwest of Château-Thierry. In the center they crossed the Marne, threatening Jaulgonne. The booty from July 18 to 23, amounted to 25,000 prisoners and over 400 guns.

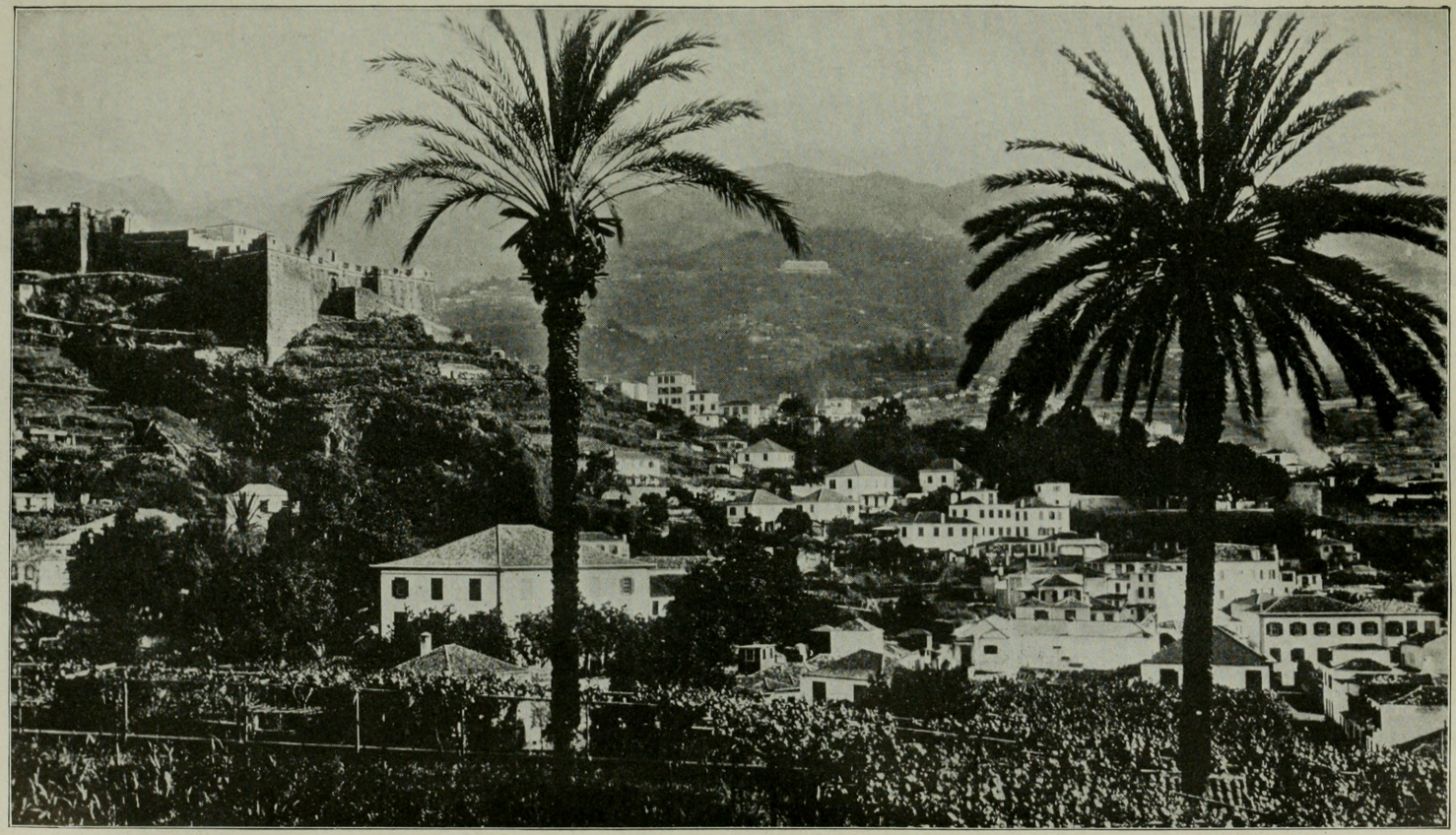
MARNE, HAUTE (hōt märn), a department in the N. E. of France, formed chiefly out of the old province of Champagne, and embracing the land in the upper basins of the Marne and the Meuse; rises in the S. into the plateau of Langres and the Monts Faucilles (1,500 to 1,600 feet); area, 2,402 square miles; pop. about 220,000. Cereals, wine (12,000,000 gallons annually), fruits and potatoes are the principal products; the department yields 200,000 tons of iron ore annually, and there are numerous furnaces; the cutlery is in high repute.

MARONITES (mär'on-īts), a body of Eastern Christians of Mount Lebanon, probably deriving their name from one Maro, a Syrian monk contemporary with Chrysostom. They adopted Monothelite errors, but were united to the Roman Church in 1182, though they soon fell away through Greek influence. In 1216 they again submitted, and the connection has subsisted ever since. They have excited more attention in Europe than other Oriental Christians, on account of the persecutions they have suffered at the hands of the Druses. In 1860, 1,300 Maronites were killed, and 100,000 driven from their homes. In 1920 the Maronites numbered about 300,000. Arabic is the vulgar, and Syriac the liturgical language.

MAROS-VASARHELY (mor'ōsh-vä'-shär-hely), the former capital of the Szekler districts in Transylvania, now a province of Rumania, on the Maros 20 miles S. E. of Klausenburg; contains a fortified castle, an old Gothic church (Reformed), a library of 70,000 volumes, and a collection of minerals and antiquities, and has a trade in timber, tobacco, wine, corn, and fruits (particularly melons). Pop. about 25,000.

MARQUESAS (mär-kā'säs) **ISLANDS,** a group in Polynesia, N. of Tuamotu or Low Archipelago; area, about 500 square miles. The name strictly applies to four or five islands discovered by Mendaña in 1595, but usually includes now the Washington group of seven islands to the N. W., which were discovered by the American Ingraham in 1791. The whole archipelago is volcanic. Hiva-oa and Nuka-hiva are the largest islands. Nearly all are shaped into several narrow valleys, in which the bulk of the population live. In Cook's time there were 100,000 inhabitants, but these had dwindled in 1920 to less than 3,000. They were perhaps the finest race of the brown Polynesian stock, and, though courteous, were cruel and revengeful. Since 1842 the islands have been a French protectorate.

MARQUETTE (mär-ket'), a city and county-seat of Marquette co., Mich., on Lake Superior and on the Duluth, South Shore, and Atlantic and the Munising, Marquette and Southeastern railroads; 53 miles E. S. E. of L'Anse. It has a beautiful harbor, with a 3,000-foot breakwater finished in 1894 by the United States government. The city contains the Protestant Episcopal Cathedral of St. Paul, the Roman Catholic Cathedral of St. Peter, a United States government building, Northern State normal school, public high school, the Peter White Public Library, a branch of the State prison, the Upper .Michigan Children's Home, waterworks, electric street railroads, National banks, and daily and weekly newspapers. Marquette has a celebrated brownstone quarry, iron and brick works, railroad machine shops, flour and lumber mills, several of the largest iron ore docks in the world, etc. In 1913 the city adopted the commission form of government. Pop. (1910) 11,503; (1920) 12,718.



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FORTRESS AND TOWN AT MADEIRA, WITH DATE PALMS IN THE FOREGROUND

Enc. Vol. 6—p. 132



© E. M. Newman

MADRID, SPAIN. A VIEW OF THE GRAND VIA BRANCHING FROM CALLE ALCALA



© *International Film Service*

OLD AND NEW METHODS OF TRANSPORTING PRODUCTS IN A MARKET PLACE OF MANILA, PHILIPPINE ISLANDS



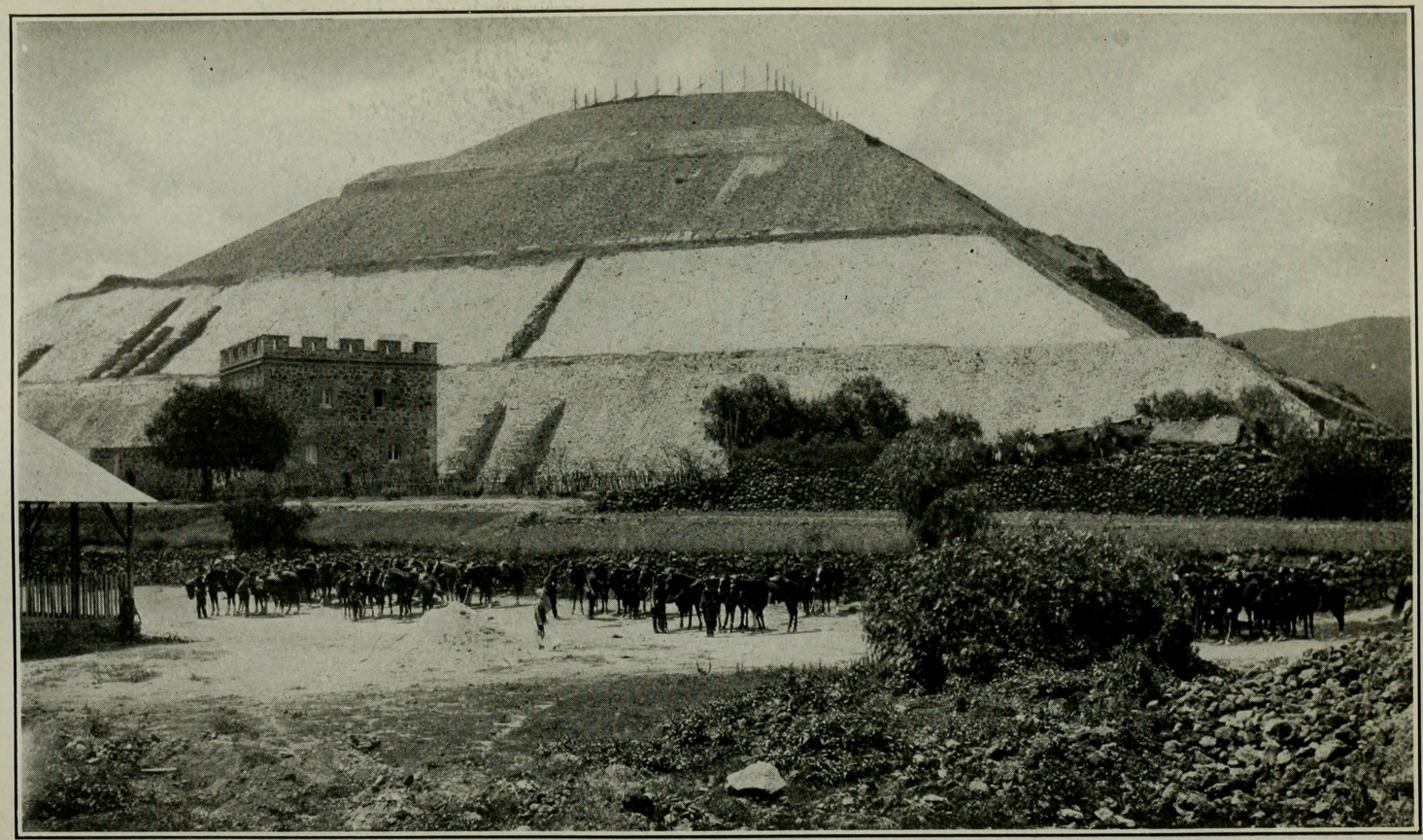
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NEW ZEALAND MAORIS READY FOR A WAR DANCE IN FRONT OF THEIR CHIEF'S HOUSE



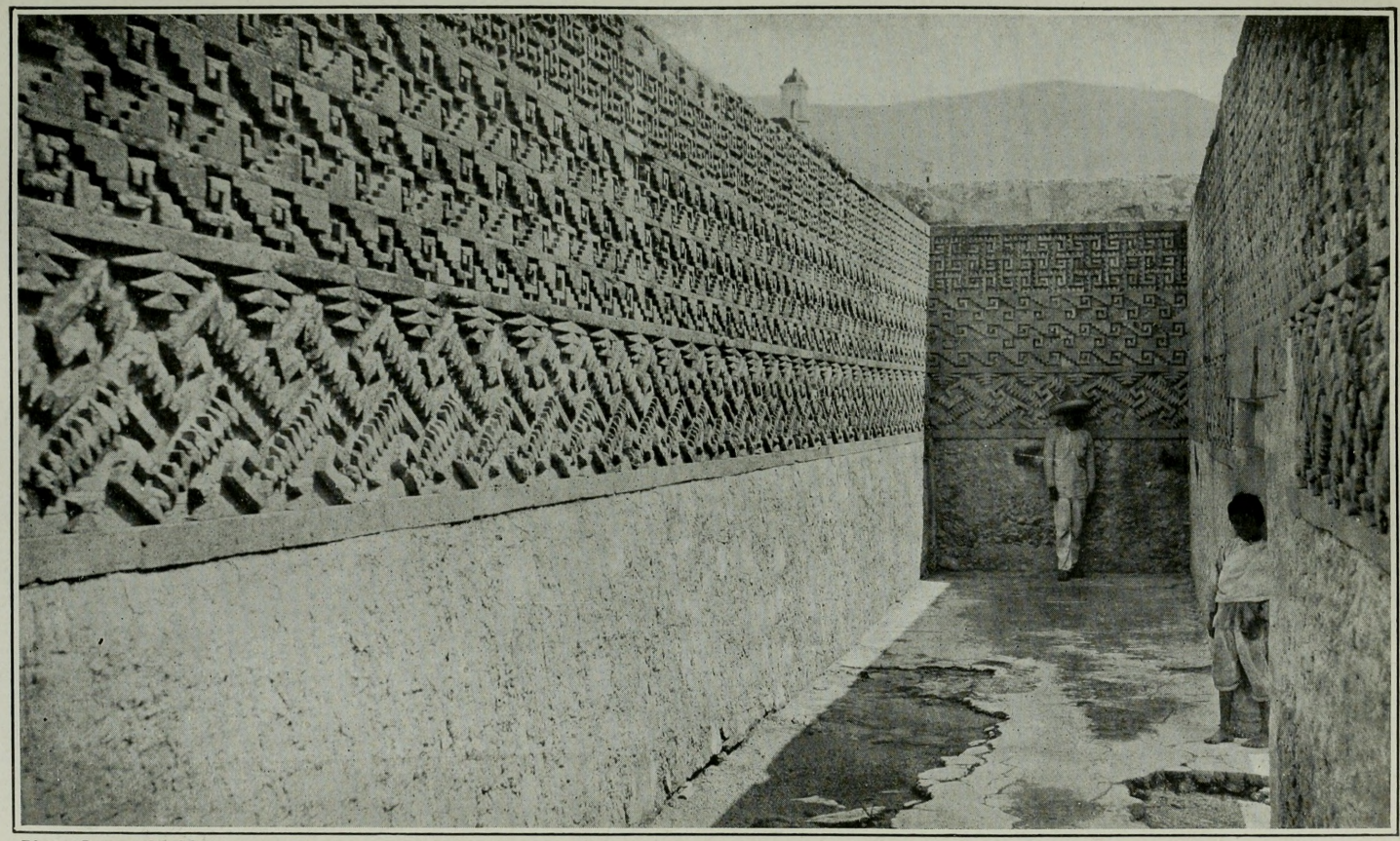
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THE MATTERHORN



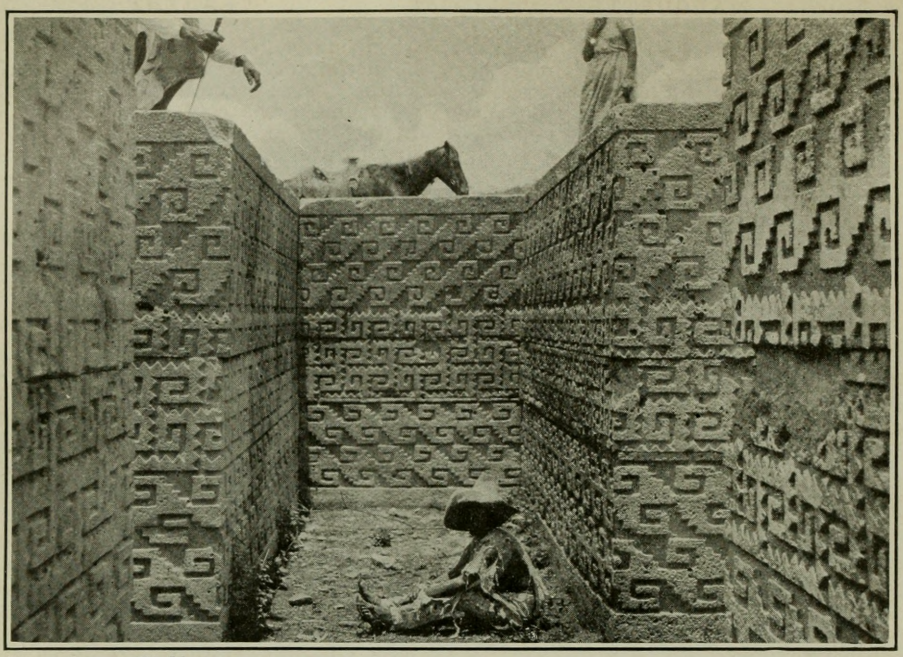
Photo, Sumner W. Matteson

THE PYRAMID OF THE SUN, AZTEC PYRAMID AT SAN JUAN, TEOTIHUACAN



Photo, Sumner W. Matteson

THE HALL OF MOSAICS IN THE RUINS AT MITLA. THE WALLS ARE DECORATED WITH AZTEC CARVING



Photo, Sumner W. Matteson

AZTEC RUINS AT CRUSERO ON MT. GIRAN, NEAR MITLA, OAXACA



Photo, Sumner W. Matteson

THE GREAT FEATHERED SERPENT, CARVED BY THE AZTECS

MARQUETTE, JACQUES (mar-ket'), a French missionary and explorer, born in Laon, France, in 1637. He became a Jesuit priest in 1666 and went to Canada as a missionary. In 1673-1674 he made an extensive missionary journey through the Lake Superior and Green Bay region, traveling, exploring, and preaching, being in this way one of the early voyagers down the Mississippi river, of which he wrote an interesting account. He died near Marquette River, Mich., May 18, 1675.

MARQUETTE UNIVERSITY, a Roman Catholic school in Milwaukee, Wis., founded in 1864. There are colleges of arts and science, engineering, law and medicine. The Medical College has received the highest rating from the American Medical Association. In all the university there are over 1,200 students and 300 officers of instruction. The university is not endowed, but supports itself solely from its tuition fees and from gifts. The grounds and buildings have an estimated value of a million and a half. The library contains in all about 35,000 volumes.

MARQUIS, or **MARQUESS**, a title of nobility in England, ranking next below a duke and above an earl. It is also a title of dignity in France, Italy, and Germany. The eldest son of a marquis in Great Britain is usually styled by courtesy an earl, and the younger sons and daughters lords and ladies. The wife of a marquis is called a marchioness. The title of Marquis is often attached as a second title to a dukedom, and is held by the eldest son of a duke during his father's lifetime. The coronet of a marquis consists of a richly-chased circle of gold, with four strawberry leaves and four balls of pearls set on short points on its edge; the cap, crimson velvet with a gold tassel on the top, and turned up with ermine.

MARRIAGE, the legal union of man and woman for life; the state or condition of being married; wedlock. In law marriage is regarded in no other light than a civil contract. The law allows it to be valid where the parties were willing to contract, able to contract, and did contract in the form required by law. In England, whence our laws are derived, disabilities to contract were formerly considered as either canonical or civil. Consanguinity, affinity, and corporal infirmity were canonical disabilities, making the marriage voidable, but not ipso facto void, till sentence of nullity had been obtained. The last of these is now, however, the only canonical disability on which marriages, otherwise regular, can be declared void. The others have by statute been declared civil disabilities, which make the contract void ab initio. In the United States the marriage laws are as diverse as the statutes of the commonwealths are in other features, and there are various impediments unknown to the English law. In some States the law is founded on the English statutes and embraces features of both canonical and civil law prohibiting marriage for all of the causes heretofore enumerated. In others consanguinity of less degree than that of sister and brother forms no bar to the marriage of persons, while in yet others a difference of race will inhibit an alliance. The absence of a recognized status of the Church in the United States necessarily places all obstacles to marriage in the catalogue of civil disability, and in many of the States a ceremonial celebration is not necessary to render a marriage valid, mutual consent before witnesses (or subsequent acknowledgment before witnesses) constituting what is known as a common law marriage. In all of the States, besides the reasons here adverted to there are three other civil disabilities: (1) A prior marriage (without legal release), in which case, besides the penalties consequent upon it as a felony, the second marriage is void. (2) Want of age, which is sufficient to avoid all other contracts, *a fortiori* it ought to avoid this, the most important contract of any. (3) Want of reason. Marriages are dissolved by death or divorce.

Communal marriage, a name for the condition which is sometimes called hetairism or promiscuity.

Complex marriage, the domestic relationship between the sexes existing in the American sect calling themselves Perfectionists.

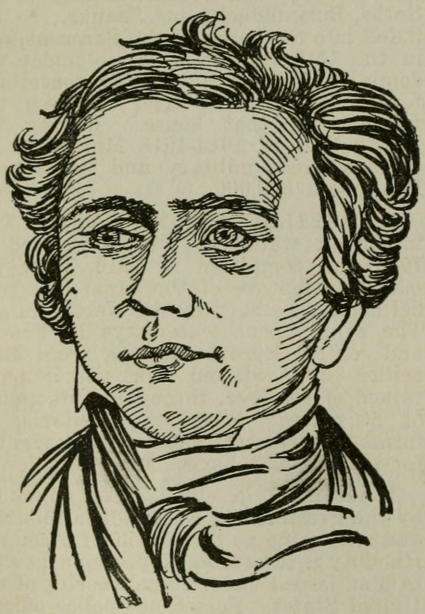
Marriage by capture, the practice of getting wives by theft or force.

MARROW, a substance of low specific gravity filling the cells and cavities of the bones of mammals. There are two varieties, which are known as red or watery marrow and yellow or oily marrow. The oily matter of the marrow is composed of the same materials as common fat, with the oleine in greater abundance.

MARRYAT, FLORENCE (MRS. FRANCIS LEAN), an English novelist, daughter of Capt. Frederick Marryat; born in Brighton, England, July 9, 1837. She married first Col. Ross Church, and then Col. Francis Lean. She became well-known as a dramatic reader and singer; was editor of "London Society" (1872-1876); and acted in London in a play of

her own, "Her World." Among her works are: "Too Good for Him," "Woman Against Woman," "Confessions of Gerald Escourt," "Veronique," "Fighting the Air," "A Daughter of the Tropics." She published "Life and Letters of Captain Marryat" (2 vols.) in 1872. Her later books were of a spiritualistic tendency. She died in London, Oct. 27, 1899.

MARRYAT, FREDERICK, an English novelist and naval officer; born in London, England, July 10, 1792. In 1806 he entered the navy as midshipman. He retired in 1830 with the rank of Captain. His first attempt in literature was made



FREDERICK MARRYAT

in 1829, by the publication of "Frank Mildmay." This was followed by "The King's Own," "Peter Simple," "Jacob Faithful," "Japhet in Search of a Father," "Newton Forster," "Midshipman Easy," "The Pasha of Many Tales," "The Poacher," "The Phantom Ship," "Snarley-Yow or the Dog Fiend," "Percival Keene," "Masterman Ready," "Poor Jack," and others. He died in Langham, England, Aug. 9, 1848.

MARS, the Roman god of war, at an early period identified with the Greek Ares, a deity of similar attributes. Like Jupiter he was designated "father," and was regarded in particular as the father of the Roman people, Romulus and Remus being the fruit of his intercourse with Rhea Sylvia. Several temples at Rome were dedicated to him. His service was celebrated not only by particular flamens devoted to him, but by the College of the Salii, or priests of Mars. The month of March, the first month of the Roman year, was sacred to him. As the tutelary deity of Rome he was called Quirinus, in his character as the god of war Gradivus (the striding). Ares, the Greek god of war, was the son of Zeus (Jupiter) and Hera (Juno). He is represented as terrible in battle, but not as invulnerable, since he was wounded at various times by Heracles, Diomedes, and Athena. He is represented as a youthful warrior of strong frame, either naked or clothed with the chlamys. The chief seats of the worship of Ares were in Thrace and Scythia.

MARS, one of the superior planets situated between the earth on the one side and the vast cluster of asteroids on the other. Its mean distance from the sun is 141,500,000 miles, and at times it is only 36,000,000 miles from the earth. It revolves around the sun a few minutes under 687 days, and rotates upon its axis in 24 hours, 37 minutes, 22.67 seconds. Its equatorial diameter is about 42,000 miles, its polar about 40 less. Its mass is about one-eighth that of the earth. When at its greatest distance from the earth its telescopic diameter is less than four seconds of arc, but when nearest this is increased to 24 seconds, hence the planet varies greatly in brightness.

Viewed by the naked eye, Mars appears of a uniformly red and fiery tint; but looked at through a powerful telescope the ruddy color is found to be confined to certain definite areas. In 1877, Hall, of the Observatory at Washington, by the aid of the great Washington refracting telescope, discovered that Mars has two satellites. The outer moon, named Deimos, is estimated to be from 5 to 6 miles in diameter, and revolves around the planet, at a distance of 12,500 miles, in 30 hours, 18 minutes. Phobos, the inner moon, is but 3,700 miles from the planet, and completes its revolution around Mars in 7 hours, 39 minutes. This is much less than the period of rotation of Mars itself, and constitutes a unique fact in the solar system, which has furnished forcible corroboration of Darwin's theory of the tides. Certain markings on the surface, known as "Canals," have caused much speculation among astronomers. A certain similarity with earth conditions has created a theory that Mars might be inhabited, and serious efforts have been made, notably in 1920, to communicate with the planet by wireless telegraphy.

MARSALA (-sä'lä), a fortified seaport city of Sicily, on its W. coast; inclosed by walls, and has a cathedral, several convents and abbeys, a gymnasium, cavalry barracks, and a curious vibrating bell tower, a famous grotto and well. It is the ancient Libybæum, which was long the capital of the Carthaginian possessions in Sicily. Pop. about 70,000.

MARSEILLAISE (mär-se-yāz'), a song written by Rouget de Lisle, an officer of artillery in the garrison of Strasbourg in 1792. It received its title from having been sung by a party of the Marseillaise Club as they entered Paris on the invitation of Madame Roland; the song, though less sanguinary in sentiment than most of the songs of the Revolution, was employed as accompaniment to many of the horrible deeds of that and of later periods, and by association became dangerous enough to be included among the songs prohibited to be sung in France under the Bourbons and the Bonapartes. It has become the national air of France, and during the World War was sung and played universally in the Allied countries, and in the United States.

MARSEILLES (mär-sālz'), French **MARSEILLE** (mär-sāy'), a city, principal commercial seaport of France, on the Mediterranean, and capital of the department of Bouches-du-Rhône; on the Gulf of Lyons. It lies in the form of an amphitheater round a natural harbor of moderate size now known as the Old Harbor. From the inner end of the harbor runs inland one of the finest of the city thoroughfares, called the Cannebière next the harbor, while at right angles to this another great thoroughfare or broad avenue runs through the city. Though a handsome city as a whole, Marseilles is not rich in public edifices. The most deserving of notice are the large new cathedral in the Byzantine style; the Church of Notre Dame de la Garde, on a hill of the same name; the Church of St. Victor; the Hôtel de Ville; the Prefecture; the Palais des Arts de Longchamp, with picture gallery and natural history museum; the exchange; public library; and the triumphal arch through which the town is entered on the side of Aix. The harbor is strongly defended by various works. What is called the New Harbor consists of a series of extensive docks along the shore to the W., with a protecting breakwater in front.

In recent times Marseilles has made great progress in its extent, street improvements, population, and commerce, largely owing to the conquest of Algeria, and the opening of the Suez Canal. The most important manufactures are soap, soda, and other chemical products; also olive and other oils, sugar, machinery, iron and brass work, candles, glass, earthenware, etc. The trade is chiefly in soap, olive oil, wine, brandy, corn, flour, dried fruits, tobacco, wool, skins, iron, cotton, etc. Marseilles was founded by a colony of Greeks from Asia Minor about 600 years before Christ, the original name being Massalia. It attained great prosperity as a Greek colonial center, and the Greek language is said to have been spoken here till several centuries after Christ. It was taken by Cæsar in 49 B. C. On the decline of the Roman Empire it became a prey to the Goths, Burgundians, and Franks. In 735 it fell into the hands of the Saracens, and in the 10th century it came under the dominion of the counts of Provence, and for some centuries after followed the fortunes of that house. During the World War of 1914-1918 Marseilles became a great military and naval port. Pop. about 600,000.

MARSEILLES-RHÔNE CANAL. This important waterway was authorized in 1903 and completed in 1916. The remarkable feature of the canal is a tunnel made necessary by the Nerthe range. The canal opens waterways in France and central Europe starting from Marseilles. It is without locks and is maintained at sea-level throughout its course of 50 miles. With its tributaries it forms a series of waterways navigable for the heaviest barges for 350 miles.

MARSHAL, a civil officer appointed by the President in each judicial district, and answering to the sheriff of a county. His duty is to execute all precepts directed to him, issued under the authority of the United States. Sometimes police officers in American cities are known as marshals. In some European countries the title of marshal confers the highest military distinction, that of Marshal of France being especially prized. Earl Marshal of England, the eighth officer of state; the title is hereditary, being held by the Duke of Norfolk.

MARSHALL, a county-seat of Saline co., Mo., 85 miles E. of Kansas City, on Chicago and Alton and Missouri Pacific railroads. Its institutions include Missouri Valley College, Academy Notre Dame de Sion, opera house and a state institution for feeble-minded. Coal mines in the vicinity. Has lumber and brick mills. Pop. (1910) 4,869; (1920) 5,200.

MARSHALL, a city and county-seat of Harrison co., Tex.; on the Marshall and East Texas and the Texas and Pacific railroads; 40 miles W. of Shreveport.

It contains the College of Marshall, and two large negro colleges, waterworks, electric and street railroad plant, National banks, daily and weekly newspapers and churches. It has a foundry, railroad shops, cotton compress, cotton gin, grist mills, pottery plant, furniture factories, etc. The city has a commission form of government. Pop. (1910) 11,452; (1920) 14,271.

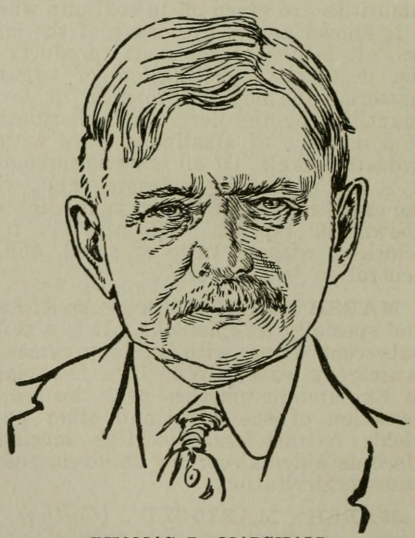
MARSHALL, JOHN, an American jurist; born in Germantown, Va., Sept. 24, 1755. He was educated at home; studied law; was an officer in the Colonial army from 1775 to 1779, where he won distinction, especially on courts-martial, in which he acted frequently as judge-advocate. In 1781 he resigned, and entered on the practice of law. He was elected to the Virginia Legislature, and in 1788 to the Virginia convention that ratified the United States Constitution, where he shared with James Madison the work of influencing its adoption. He went as envoy to France in 1798, but was superseded on account of his Federalistic views. In 1799 he entered Congress; refused appointment as Secretary of War. In 1800 took office as Secretary of State. In 1801 he was nominated chief-justice of the United States by President John Adams, and confirmed unanimously by the Senate. This office he held 34 years, during which his decisions on constitutional questions established precedents in the interpretation of the Constitution that have been accepted ever since. He died in Philadelphia, July 6, 1835.

MARSHALL, THOMAS RILEY, Vice-President of the United States, was born in 1854 in Indiana, graduating from Wabash College in 1873. He was admitted to the bar in 1875 and soon attained considerable success and reputation as an orator. After being several times nominated for office by the Democrats, but defeated in the election, he was elected governor of Indiana in 1908. While governor he favored the so-called progressive measures of popular election of senators, employers' liability laws, etc. His supposed opposition to the Democratic machine politicians headed by Taggart, won Marshall considerable popularity and also Indiana's support for the Democratic presidential nomination in 1912. While not successful in gaining the coveted nomination, he did gain second place on the Democratic ticket and was elected Vice-President in 1912, to which office he was re-elected in 1916.

MARSHALL, SIR WILLIAM RAINE, English Lieutenant-General; born in 1865. Served on the northwestern frontier of India 1897-1898; in the South African War of 1899-1902.

Lieutenant-General Marshall succeeded to the command of the Anglo-Indian Army in Mesopotamia on the death of General Sir Stanley Maude, Nov. 18, 1917. In March, 1918, his forces were victorious over the Turks at Hit and Kahn-Baghdadi on the Euphrates. On Oct. 3 General Marshall's drive began along the Tigris against Mosul. On Oct. 2, Kirkuk was won and a passage forced over the Sesser Zab, a branch of the Tigris. Oct. 25-28 Kalat Shergat was captured and on the 30th the Turkish Army on the Tigris surrendered.

MARSHALL ISLANDS, a group of islands in the W. Pacific, bisected by lat. 10° N., having the Caroline group to the W., and consisting of two parallel chains of low coral reefs—one, the Ratak group, consisting of 15 islands, and measuring in all 48 square miles; the other, the Ralik group, 18 islands, with a total area of 107 square miles. Total pop. of group (1920) about 15,000, nearly all natives; most populous island, Maje-



THOMAS R. MARSHALL

ru; several of the islands are uninhabited. The cocoanut and pandanus palms and the bread-fruit tree are the principal sources of food, besides fish. Copra is the only export. The inhabitants belong to the Micronesian division, and are an ugly but good-natured and hospitable race, fond of song and dance, and skilful weavers of bast mats. These islands were annexed by Germany in 1885, but by the Treaty of Versailles were awarded to Australia.

MARSHALLTOWN, a city and county-seat of Marshall co., Ia.; on the Chicago and Great Western, the Minneapolis and St. Louis, and the Chicago and Northwestern railroad; 75 miles N. E. of Des Moines. It is the seat of the Iowa State Soldiers' Home, and has National and State banks, public library, waterworks, glucose factory, grain elevator, flour mills, meat-packing plant, carriage and furniture factories. Pop. (1910) 13,374; (1920) 15,731.

MARSHFIELD, a town of Wood co., Wis., 95 miles N. W. of Menasha, on the Wisconsin Central railroad. It is in the center of an agricultural district and its manufacturing plants turn out bee supplies, wood veneer, household furniture, beds, springs, etc. Pop. (1910) 5,783; (1920) 7,394.

MARSH GAS, in chemistry, $CH_4 = \begin{matrix} CH_3 \\ H \end{matrix}$, methane; light carburetted hydrogen, hydride of methyl, a hydrocarbon gas very abundant in nature. It is evolved from stagnant water, and great quantities are given off in coal pits where it is known as the fire damp of the miners. It is one of the usual products of the destructive distillation of organic matters. It may be formed in large quantities by the destructive distillation of a mixture of alkaline acetate with a hydrated alkali. Of all known compounds it is the richest in hydrogen, and, with the exception of the latter, is the lightest known gas (sp. gr. .5576, air=1). It is colorless, without taste or smell, and is neutral to test paper.

MARSH MALLOW, the genus *Althæa*, and specially *A. officinalis*. It is a softly pubescent plant, with axillary cymes of large rosy leaves. Wild in a few places in England in marshes near the sea. A decoction of the roots and other parts yields a tasteless, colorless mucilage. Used as a demulcent for children, and in cases of irritation.

MARSH MARIGOLD (*Caltha*), a genus of plants of the natural order *Ranunculaceæ*, having about five petal-like sepals, but no petals; the fruit consists of several spreading, compressed, many-sided follicles. *C. palustris* is a very common British plant, with kidney-shaped, shining leaves, and large yellow flowers, a principal ornament of wet meadows and the sides of streams in spring. It partakes of the acridity common to the order; but the flower buds, preserved in vinegar and salt, are said to be a good substitute for capers. It is often called cowslip in the United States.

MARSTON, JOHN, an English dramatic author; born about 1575. He was educated at Corpus Christi College, Oxford. He was entered at the Middle Temple, where he became lecturer. He was the author of eight plays, all acted at the Blackfriars Theater with applause. Six of these were printed in one volume in 1633, and dedicated to the Viscountess Falkland. He assisted Ben Jonson and Chapman in the composition of "Eastward Ho." He also wrote three books of satires, entitled the "Scourge of Villanie" (1599). He died in London, June 25, 1634.

MARSTON MOOR, a plain in Yorkshire, England, where a decisive battle was fought between the Royalists under Prince Rupert, and the Parliamentary army under Lord Fairfax and Oliver Cromwell, July 2, 1644, in which the Royalists were completely routed.

MARSUPIALIA (-ā'li-ä), or **MARSUPIATA** (-ā'tä), in zoölogy, pouched animals or mammals having a marsupium or pouch. Under the designation *Marsupiata* they were considered by Cuvier to be a subdivision of his order *Carnassiers* (*Carnivora*), though their teeth were of various types, and many were vegetable feeders. Some have an analogy to the *Insectivora*, others to *Carnivora*, others to the *Rodentia*, from all of which they differ in possessing a marsupium or pouch. They are now generally termed *Marsupialia*, and elevated into a subclass, called by Professor Huxley and others, *Didelphia*. The young are born of a small size and imperfect in condition, but are transferred to the marsupium, where they become attached to a long nipple which supplies them with milk. There is evidently in this arrangement a first faint approach to the oviparous one which characterizes birds. The majority of the species inhabit Australia and its adjacent islands, though the *Didelphidæ* (opossums) are American.

MARTEL, CHARLES. See CHARLES MARTEL.

MARTEN, the popular English name for any individual of Cuvier's sub-genus *Mustela*, or of Nilsson's *Martes*. They are limited to the N. portion of both hemispheres, ranging S. as far as 35° S. in America; one species, the Indian marten, occurs in Java. The species are very similar in their habits, arboreal, and, as a rule, carnivorous, though less so than the weasels. According to Rolleston, the common European marten "was functionally the 'cat' of the ancients." But it is as fur-yielding animals that the martens are most important, and vast

numbers are taken every year to supply the wants of civilization. The finest fur comes from the highest latitudes, principally from North America and Siberia.



MARTEN

According to Alston, the pine marten (*Mustela martes* or *abietum*) is the sole British species; though Bell includes beech marten or stone marten in the fauna.

MARTHA'S VINEYARD, an island on the S. coast of Massachusetts, 21 miles long, 6 miles in average width. It is noted as a summer health resort.

MARTIAL (mär'shal) **(MARCUS VALERIUS MARTIALIS)**, a Latin epigrammatist; born in Bilbilis, Spain, in 43 A. D. His poems, which consist of about 1,500 pieces, are interesting for their allusions to the persons and manners of the times, but abound with indelicacies. Martial went to Rome when about 20 years of age, and obtained the favor of Domitian. He died in Spain about 104.

MARTIAL LAW, government by arbitrary military power, superseding municipal, or State law, when the State is imperilled from without or within and the regular administration is unequal to the task of securing general safety. Martial law is declared to enforce extraordinary measures. It is not a law, as commonly understood, but an abrogation of law, having no legislative sanction. The U. S. Supreme Court has held that a State legislature may proclaim its existence, should the safety of the public demand it. The Constitution tacitly permits its proclamation in the clause providing that privileges of the writ of habeas corpus should not be suspended, except when necessary in the case of rebellion and invasion.

MARTIGNY, three villages in Switzerland united under this name. Located in the Rhône valley S. of the E. end of Lake Geneva. Situated on the Simplon road into Italy. Pop. about 6,000.

MARTIN, a migratory bird, closely resembling the swallow. It builds a mud nest under the eaves of houses and barns, but it differs from the swallow in having a conspicious white band across the lower back. The sand martin (*H. riparia*) is pale brown above and white below. It hollows out galleries in the banks, where it nests and breeds. The sand martin and the house martin are both birds of passage, arriving in spring and departing toward the end of summer. *Cypselus apus*, the swift, is sometimes called the black martin. The purple martin of America is *Hirundo* (or *Progne*) *purpurea*. The plumage of the male is almost wholly steel-blue; the female is duller in color above, brownish-gray beneath. The fairy martin of Australia is *Hirundo ariel*.

MARTIN, the name of five Popes, as follows:

MARTIN I., succeeded Theodore in 649, but was deposed by the emperor, and banished, after suffering great indignities, to the Sarmatian Chersonese, where he died in 655, being afterward numbered, for his suffering, among the saints. MARTIN II. succeeded John in 882, but died within 18 months of his election. MARTIN III. ascended the papal chair on the death of Stephen VIII., in 943, and died three years after. MARTIN IV. (Nicholas de la Brie), a Frenchman, succeeded Nicholas III. in 1281. Having been, from the time of his election, a devoted adherent of Charles of Anjou, he supported that monarch with all his influence, and even by the spiritual censures which he had at his command, in his effort to maintain French domination in Sicily; and it is to his use of the censures of the Church in that cause that many Catholic historians ascribe the decline and ultimate extinction of the authority in temporals which the papacy had exercised under the distinguished pontiffs who preceded him. It is in his time that took place the memorable tragedy known as the "Sicilian Vespers." He died in 1285. MARTIN V. (Otto Colonna), was elected after the abdication of Gregory XII., and the deposition of John XXII. and Benedict XII., his election finally extinguishing the great Western Schism. Martin presided at the last sessions of the Council of Constance, and the Fathers having separated without discussing the questions of reform, at that period earnestly called for in the Church, Martin undertook to call a new council for the purpose. The council was summoned accordingly, after several years, to meet at Siena, and ultimately assembled at Basel in 1431. Martin died in the same year.

MARTIN, EDWARD SANDFORD, an American journalist; born in "Willow-

brook," Owasco Lake, N. Y., Jan. 2, 1856. He was graduated at Harvard College, in 1877, and was author of "Sly Ballades in Harvard China"; "A Little Brother of the Rich, and Other Poems"; "Windfalls of Observation"; "Reflection of a Beginning Husband" (1913); "The Unrest of Women" (1915); "The Diary of a Nation" (1917). He was for many years the chief editorial writer for "Life."

MARTIN, HOMER DODGE, an American artist; born in Albany, N. Y., Oct. 28, 1836; was chiefly self-taught in painting; opened a studio in New York City in 1862; was elected a member of the National Academy of Design in 1875; and resided in France in 1882-1886. While he was influenced somewhat by the Barbizon School of painters, no painter was more original than he. He succeeded in developing a style entirely his own, which was of so high a quality as to place him among the best known of American landscape painters. His best known works include "Landscape on the Seine"; "An Equinoctial Day"; "Brook in the Woods"; "In the Adirondacks"; "Sand Dunes on Lake Ontario"; "White Mountains, from Randolph Hill"; etc. He died in St. Paul, Minn., Feb. 12, 1897.

MARTIN, RICCARDO, an American tenor, born in 1878 in Kentucky and trained at Columbia University under MacDowell. After studying piano and voice culture abroad, in 1900 he established himself in New York as a teacher of singing. Later, in 1904, he studied abroad and made his first appearance in opera in Nantes. In the course of a few years he returned to America and became in 1907 a member of the Metropolitan Opera House in New York. Martin became Caruso's substitute when the latter journeyed to Monte Carlo in 1915. In later years he has appeared frequently at the Covent Garden Opera in London.

MARTIN, SIR THEODORE, an English biographer; born in Edinburgh, Scotland, Sept. 16, 1816. Married the actress Helen Faucit in 1851; was elected rector of the University of St. Andrews in 1880. He made many excellent translations from Horace and Catullus, from Dante, from Goethe, Schiller, and Heine, and from mediæval ballads, epigrams, etc. On the completion of the "Life of the Prince Consort" (5 vols. 1874-1880), he was knighted. He died Aug. 18, 1909.

MARTIN, WILLIAM ALEXANDER PARSONS, an American educator; born in Livonia, Ind., April 10, 1827. A missionary originally at Ningpo, China (1850-1860), he founded and directed the Presbyterian mission at Peking, 1863-1868; became Professor of International Law at Tungwên College, Peking, in 1868; president in 1869; was sent by China to the United States and Europe to report on methods of education in 1880-1881. From 1898 to 1900 he was president of the Imperial University of Peking. He published in Chinese, "Evidences of Christianity" (1855); "The Three Principles" (1856); etc.; in English, "The Lore of Cathay, or the Intellect of China" (1901). He died in 1916.

MARTINEAU, HARRIET (mär'tinō), an English reformer, sister of James Martineau; born in Norwich, England, June 12, 1802. She visited the United States in 1834, aiding the abolitionists, and traveled in Palestine and the East in 1846. She wrote a series of stories based on political economy (1832). Among her more important works are: "Society in America" (1836); "Deerbrook" (1839), a novel; "History of England during the Thirty Years' Peace" (1848); "British Rule in India" (1857); "Biographical Sketches" (1869); etc. She died in Ambleside, Westmoreland, England, June 27, 1876.

MARTINEAU, JAMES, an English clergyman and writer, brother of Harriet Martineau; born in Norwich, England, April 21, 1805. He was educated at the Norwich Grammar School, Dr. Lant Carpenter's school at Bristol, and Manchester New College, York. He became in 1841 Professor of Mental and Moral Philosophy in Manchester New College. In 1857 he removed to London, and was minister of Little Portland Street Chapel from 1859 to 1872. In 1868 he was appointed principal of Manchester New College (which from 1853 had been in London). He was author of "The Rationale of Religious Inquiry" (1837); "Miscellanies" (1852); "Studies of Christianity" (1858); "Essays Philosophical and Theological" (1868); "Modern Materialism" (1876); "A Study of Spinoza" (1882); "A Study of Religion" (2 vols. 1887), and many other works on kindred topics. He died in London, Jan. 11, 1900.

MARTINELLI, SEBASTIAN (märtē-nelʹlē), a papal delegate; born in Lucca, Tuscany, Aug. 20, 1848; studied at the St. Anne Seminary in Lucca, and at the College of St. Augustine in Rome; was ordained a Roman Catholic priest in March, 1871; made prior-general of the Augustinian Order in 1889; appointed apostolic delegate to the United States, and consecrated a special archbishop in 1896; was raised to the cardinalate, April 15, 1901, and recalled in 1902.

MARTINIQUE (mär-ti-nēk), native name Madiana (mä-dē-ä'nä), one of the Lesser Antilles, in the West Indies; area, 381 square miles; pop. (1916) 193,-087, of whom only 10,000 are whites. Sugar, coffee, cocoa, tobacco, and cotton are the main crops, besides about 40,000 acres under cultivation for food products; imports (1918) about $10,500,000, exports about $9,800,000. Chief commercial town Fort-de-France (about 22,000). The island was colonized by the French in 1635. A terrible volcanic eruption of Mont Pelée devasted the island in 1902, reducing the population two-thirds and entirely destroying the city of St. Pierre, where only one survivor remained. The loss of life was over 30,000.

MARTINSBURG, a city and county-seat of Berkeley co., W. Va.; on the Pennsylvania, Western Maryland and Baltimore and Ohio railroads; 70 miles W. of Washington, D. C. It contains a hospital, several private educational institutions, an excellent high school, United States court house, and weekly newspapers. It has woolen and hosiery mills, foundry, lime, brass, and phosphate works, the shops of the Baltimore and Ohio railroad, quarries, wagon factories, canning factory, etc. Pop. (1910) 10,-698; (1920) 12,515.

MARTIN'S FERRY, a city in Belmont co., O.; on the Ohio river, on the Baltimore and Ohio, the Wheeling and Lake Erie, and the Pennsylvania railroads; almost opposite Wheeling, W. Va. It is located in an iron, bituminous coal, and limestone region; has waterworks, street railroads, iron and nail works, extensive tin mills, machine shops, large manufactories of glass, planing mills, stove works, etc. Pop. (1910) 9,133; (1920) 11,634.

MARTYR, one who suffers death or persecution on account of his religious belief. One who, for the sake of a great cause or ruling principle, makes sacrifice of life, estate, or worldly station.

MARTYR, PETER (PIETRO VERMIGLI), an Italian reformer; born in Florence, Italy, Sept. 8, 1500. He entered the order of the regular canons of St. Augustine at Fiesole in 1516, and in 1519 removed to Padua, where he studied Greek and philosophy. After holding important offices in his order he was compelled in 1542 on account of his religious opinions to take refuge in Zürich. Soon after he became Professor of Divinity at Strassburg, and in 1547 accompanied Bucer and other reformers, on the invitation of Archbishop Cranmer, to England. In 1556 he removed to Zürich to occupy the office of theological professor. Martyr was the author of many works on divinity, including Biblical commentaries. He died in Zürich, Nov. 12, 1562.

MARVEL, IK. See MITCHELL, DONALD G.

MARVELL, ANDREW, an English publicist; born in Winestead, Yorkshire, England, March 31, 1621. He was educated at Cambridge University. After employment abroad he became secretary to the poet Milton. Charles II. delighted in his wit and conversation. Marvell steadily refused to sacrifice his personal and political integrity. Attempts were made to win his influence. "Honest Andrew Marvell" died in London, Aug. 18, 1678.

MARWAR (mär'wär), or **JODHPUR** (jōd-pör'), a state of Hindustan, tributary to the British; area, 34,963 square miles; pop. about 2,200,000. Marwar may be taken as the type of the old Rajpoot states of India. The country consists generally of open plains, the hills being almost confined to the S.; the soil, almost everywhere watered by torrents and affluents of the Loonee, or Salt river, produces heavy crops of barley and other kinds of grain; the inhabitants are chiefly Rajpoots. Capital, Jodhpur, 100 miles W. S. W. of Ajmeer.

MARX, KARL (märks), a German socialist, born in Treves, May 5, 1818. He studied jurisprudence, philosophy, and history at Bonn and Berlin; edited the "Journal of the Rhine," 1842-1843; on its suppression went to Paris, but was expelled from there (1845) and took refuge at Brussels; founded the "New Journal of the Rhine" at Cologne (1848); expelled again from Prussia (1849), settled in London. He was the controlling spirit of the International, 1864-1872. His great work was "Das Kapital" (Capital: 1867; new ed. 1885). Vol. I, containing all the essential points of his theory, was translated into English (London, 1887). The entire work appeared in an English translation in 1893. He died in London, March 14, 1883. Marx's philosophy in distorted form became the foundation of the Bolshevist and other radical movements which were the aftermath of the World War. See BOLSHEVISM.

MARY (Hebrew Miriam), called in the New Testament the Mother of Jesus.

MARY OF MAGDALA. See MAGDALEN.

MARY I. (MARY TUDOR), Queen of England, daughter of Henry VIII. and

his first queen, Catherine of Aragon; born in Greenwich Palace, Feb. 18, 1516. She early espoused her mother's cause during the proceedings for divorce then pending, and thereby became estranged from her father. On her accession to the throne in 1553 she liberated the imprisoned Roman Catholic prelates, substituting Archbishop Cranmer, Bishop Latimer, and other leading Protestant divines in their stead; then she sent Lady Jane Grey and her husband, Lord Guilford Dudley, to the block on a charge of treason; and on the instigation of Gardiner proclaimed the repeal of all the laws of Henry VIII. and Edward VI. for the maintenance of the Reformed religion. She married Philip II. of Spain in 1554. In 1557, war being renewed between France and Spain, and Mary taking sides with Spain, Calais was lost to the English nation. She died in St. James Palace, Nov. 17, 1558.

MARY II., Queen of England; born in St. James Palace, April 30, 1662. She was daughter of James, Duke of York, afterward James II., by his wife Anne Hyde, daughter of Lord Clarendon. She was married in 1677 to William, Prince of Orange; and when the Revolution dethroned her father, Mary was declared joint-possessor of the throne with William, on whom all the administration of the government devolved. She died of smallpox in Kensington Palace, Dec. 28, 1694.

MARY, Queen consort of George V. of England; born in 1867, Princess Victoria Mary of Teck. Married Prince of Wales, afterward King George V, July 6, 1893. Five sons and a daughter were born of the union—Edward Albert, 1894; Albert Frederick, 1895; Mary, 1897; Henry, 1900; George, 1902, and John, 1905.

MARY, QUEEN OF SCOTS (MARY STUART), only daughter of James V. of Scotland and Mary of Guise; born in Linlithgow, Scotland, Dec. 8, 1542. James, dying of chagrin in a few days after her birth, the Parliament made James, Earl of Arran—head of the great house of Hamilton, and heir-presumptive to the throne—regent of the kingdom. Mary was crowned Queen of Scotland, at Stirling, in 1543. The young queen's betrothal to the Dauphin, son of Henry II., led to Mary's visit to France in 1548, where George Buchanan taught her Latin, and Ronsard, poetry. The marriage of the Dauphin with Mary took place in 1558. On the death of Henry II., and her husband's accession to the throne as Francis II., Mary became Queen of France, a position which lasted not quite 17 months, her husband dying in December, 1560. Mary now coldly treated in France resolved to return to her native country. In Scotland, at this time, the Roman Catholic party had been overthrown.

Mary's marriage becoming an object of national importance, she finally made choice of her cousin, Henry Stuart, Lord Darnley, a handsome, accomplished, dissipated youth. On July 20, 1565, Darnley was created Duke of Albany, and nine days after the marriage was solemnized; Darnley being created, also, king-consort on the day preceding. Her half-brother,



MARY, QUEEN OF SCOTS

the Earl of Murray, after bitterly opposing this union, headed a rebellion against the crown, but was defeated. Darnley, jealous of the queen's parasite Rizzio, determined to murder the minion; and accordingly burst into the queen's apartment in Holyrood Palace, where she was supping with Rizzio and others, March 9, 1566, and dragged the Italian from the queen's presence, dispatched him on the stairs. They next imprisoned Mary; but she, effecting her escape, reconciled herself with Murray and pursued her vengeance on Rizzio's murderers, excepting Darnley. June 19 of the same year her only child, afterward James VI. of Scotland and James I. of England, was born.

A plan was now entered into between the Earls of Murray and Bothwell, and other nobles, for the assassination of Darnley, then lying ill at Kirk-of-Field, a house near Edinburgh. The house containing the sick Darnley was blown up by gunpowder on the night of Feb. 9,

1567, while the queen was attending a masquerade at Holyrood Palace. Mary showered honors and favors on Bothwell, one of the prominent actors in the tragedy. His trial was demanded and took place, but merely as a farce. Mary was seized by Bothwell at the head of a strong body of retainers, and conveyed to his castle of Dunbar; but, being permitted to return to Edinburgh, she there created her lover Duke of Orkney, and married him. The great nobles at once formed a combination against the queen, supported by the burghers of the principal cities, and seized the castle of Edinburgh. June 15 the two armies met at Carberry Hill, where the royal troops at once surrendered. Bothwell fled, and the queen was taken to Lochleven Castle and there placed in confinement. On the 25th of the same month she signed her abdication of the crown in favor of her infant son, with the Earl of Murray as regent.

In May, 1568, she succeeded in escaping from Lochleven, and assembling some adherents encountered the regent Murray's army at Langside, near Glasgow, where she was utterly defeated and her cause irretrievably lost. Mary fled to England, and was at first considerately treated by Elizabeth, who later committed her to prison. She was removed to Fotheringay Castle in Northamptonshire in 1586, was declared guilty of treason, and condemned to death. She was brought to the block in Fotheringay Castle, Feb. 8, 1587.

MARYBOROUGH, a city in Queensland, Australia. Important quartz- and gold-mining industries are located there. Pop. about 12,000.

MARYLAND, a State in the South Atlantic Division of the North American Union; bounded by Pennsylvania, Delaware, Virginia, West Virginia, and the Atlantic Ocean; one of the original 13 States; counties, 24; area, 9,860 square miles; pop. (1890) 1,042,390; (1900) 1,188,044; (1910) 1,295,346; (1920) 1,449,661. Capital, Annapolis.

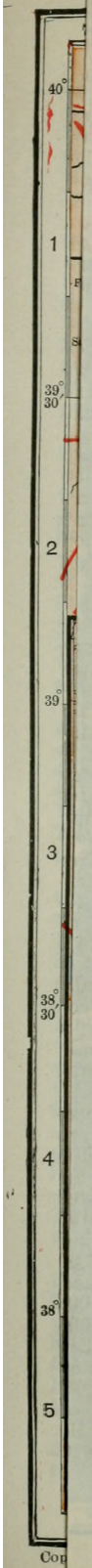
Topography.—The surface of the State is varied, with three prominent divisions, the Coast Plain, including the Western Shore, between the ocean and Chesapeake Bay; the Piedmont plateau, extending from the bay W. to the Catoctin Mountains, and the Appalachian Mountain region. The Chesapeake Bay cuts the State in two parts, and with its principal affluent, the Potomac river, forms the principal water system of the State. The mountains in the W. are divided into three ranges, the Blue Ridge, Appalachian, and Allegheny, and reach an elevation of 3,000 feet. The Atlantic coast has no good harbors, but the bay with its numerous coves and estuaries gives excellent facilities for water transportation. The principal rivers are the Potomac on the S. boundary, the Susquehanna flowing in from Pennsylvania on the N. and emptying in the bay, and the Patuxent, Patapsco, Gunpowder on the Western Shore; and the Elk, Sassafras, Chester, Choptank, Nanticoke, Wicomico, and Pocomoke, on the Eastern Shore, all of which empty into Chesapeake Bay.

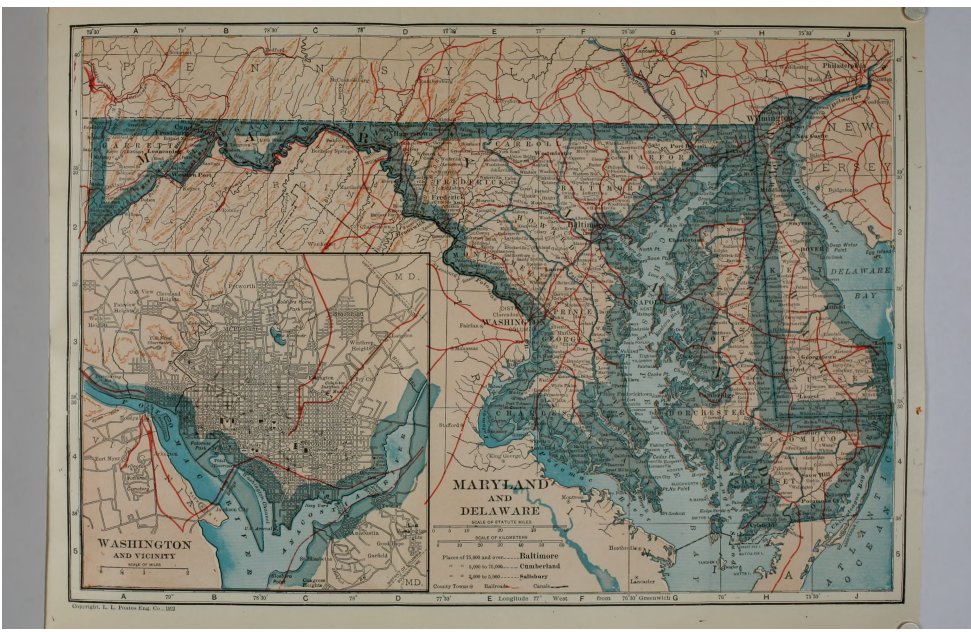
Geology.—Nearly every geological period is represented in Maryland, the Archæan deposits are found over nearly the whole State. Metamorphosed rocks, such as granites, gneisses, basalt, and marble, occur in the Piedmont Plateau, and in western Maryland the Silurian, Devonian, and Carboniferous series are found. The Eastern Shore presents sands, clays, and granites of more recent origin. The Upper Jurassic period is represented by dinosaurian remains in Prince George's county.

Soil.—The soil in the E. part of the State is a light sandy loam, and is especially adapted to truck farming and market gardening. The soil in the valleys of the N. and central portions is especially adapted to grass and wheat cultivation. The climate is equable, and not subject to sudden changes, the thermometer seldom falling below zero. The principal forest trees include cypress, gum, cedar, juniper, dogwood, holly, magnolia, elm, cherry, oak, locust, sycamore, sassafras, poplar, maple, walnut, ash, birch, chestnut, hickory, and pine.

Mineral Production.—Practically the only mineral production in the State is coal, and of this between three and four million tons are produced annually. About 6,000 men are employed in the coal mines of the State, and the product is valued at about $4,000,000. Other mineral products are sandstone, granite, slate, pottery, and mineral waters.

Agriculture.—In addition to the regular farm crops, the State is a large producer of truck garden products, including tomatoes and fruits. The production and value of the principal crops in 1919 were as follows: corn, 28,413,000 bushels, valued at $39,778,000; oats, 1,820,000 bushels, valued at $1,492,000; wheat, 10,655,000 bushels, valued at $22,930,000; tobacco, 19,575,000 pounds, valued at $5,872,000; hay, 630,000 tons, valued at $15,120,000; potatoes, 5,170,000 bushels, valued at $6,721,000. The figures for live stock were as follows: horses, about 170,000, valued at about $20,000,000; mules, about 25,000, valued at about $3,500,000; milch cows, about 175,000, valued at about $10,-


40°
1
39°
30'
2
39°
3
38°
30'
4
38°
5


MARYLAND
AND
DELAWARE
WASHINGTON
AND VICINITY
Baltimore
Cumberland
Salisbury
Longitude 77° West from 20°30' Greenwich
Copyright, L. L. Poates Eng. Co., 1921

000,000; other cattle, about 120,000, valued at about $3,600,000; sheep, about 223,000, valued at about $1,660,000; swine, about 350,000, valued at about $3,400,000. The production of wool annually amounts to about 750,000 pounds.

Manufactures.—The State has great manufacturing importance, especially in and around Baltimore. The total number of establishments in 1914 was 4,797, the total number of wage earners, 111,585, the capital invested amounted to $293,211,000, the amount paid in wages, $53,792,000, the value of materials, $238,972,000, and the value of the completed products at $337,749,000.

Banking.—There were in 1919 95 National banks, with an outstanding circulation of $10,632,753 and a capital of $16,400,000 and United States bonds in deposit, $9,677,000. There were 112 State banks with a capital of $5,150,000, deposits of $75,876,000 and a surplus of $3,632,000. There were 26 trust companies with a capital of $10,570,000 and deposits of $113,846,000. The exchanges in the clearing house in Baltimore for the year ending September 30, 1919, amounted to $4,196,983,000.

Transportation.—The total railway mileage in the State is about 1,400 miles of single track. The Baltimore and Ohio has 336 miles, the Philadelphia, Baltimore and Washington, 329 miles, the Western Maryland, 272 miles, and the Baltimore, Chesapeake and Atlantic, 88 miles.

Education.—The school population of the State is about 420,000 and the enrollment in the county schools is about 150,000. There are about 2,400 schools in the counties and about 125 in Baltimore. The average daily attendance in the county schools is about 150,000. About 6,000 teachers are employed. The total expenditures for educational purposes exceeds $5,000,000 annually. The total value of the school property is more than $10,000,000. There are many private schools in the State and several important colleges and universities, including Johns Hopkins University, University of Maryland, Western Maryland College, Goucher College for Women, and the Women's College.

Churches.—The strongest denominations in the State are Roman Catholic; Methodist Episcopal; Protestant Episcopal; Lutheran, General Synod; African Methodist; Methodist Protestant; Reformed; Methodist Episcopal, South; Presbyterian, North; and Regular Baptist, South.

Finances.—The total receipts for State expenses for the fiscal year 1919 amounted to $13,128,211, and the disbursements to $12,537,881. There was a balance on hand at the end of the year amounting to $3,018,617.

Charities and Corrections.—All the public charitable institutions of the State are under the supervision of the Board of State Aid and Charities. Among the most important of these institutions are the following: Home and Infirmary of Western Maryland, the Hospital for Consumptives, Industrial Training School for Girls, Industrial Home for Colored Girls, the Spring Grove State Hospital, the Springfield Hospital for the Insane, the Tuberculosis Sanitorium, and the Eastern Shore State Hospital.

State Government.—The governor is elected for a term of four years, and receives a salary of $4,500 per annum. Legislative sessions are held biennially in even years beginning on the first Wednesday in January, and are limited in length to 90 days. The Legislature has 27 members in the Senate, and 102 in the House, each of whom receives $5.00 per day. There are 6 representatives in Congress. The State government in 1920 was Democratic.

History.—The earliest settlement in Maryland occurred in 1631, in which year a party of English, from Virginia, under Capt. William Clayborne, established themselves on Kent Island, in Chesapeake Bay. The main colonization of this region, however, was made in 1634, by a body of English Roman Catholic cavaliers, under a charter granted to the 2d LORD BALTIMORE (*q. v.*) by Charles I., bearing date June 20, 1632. The expedition sailed from England in November, 1633, and landed on St. Clement's Island in March, 1634, founding the settlement of St. Mary's on the mainland, two days after their arrival. Leonard Calvert was elected first governor, and a House of Assembly established in 1639, which, 11 years later, was divided into two houses —the one consisting of members chosen by the Proprietary, and the other by the Freemen. In 1642, difficulties supervened from the introduction of the Puritan element into the province in the shape of a body of non-conformists, who had been exiled from Virginia. The latter, true to their natural instincts of bigotry and intolerance, soon manifested a spirit of insubordination toward the executive of their newly-adopted country; and made themselves masters of the province in 1644. Two years later, however, Governor Calvert, returning at the head of a considerable military force, succeeded in re-establishing his authority. On the overthrow of the royal authority in England, and the substitution of the Commonwealth and Puritan rule, the parti

sans of the latter, who had by this time obtained a considerable footing in the province of Maryland, demanded an instant recognition of the new form of government. The Proprietary and executive, however, proclaimed Charles II., but were compelled, in 1652, to abdicate their functions, which were usurped by commissioners dispatched from the puritanical home government. In 1654 Lord Baltimore made a resolute attempt to restore his authority, and a civil war ensued, in which the Puritans were eventually victorious, in 1655. At length, after the restoration of Charles II., the Proprietary was reinstated. In 1729 Baltimore was founded, and in 1745 the Maryland "Gazette," the first journal printed in the province, was published at Annapolis, maintaining its existence for 94 years afterward. Frederick City was laid out in 1751, and the colony progressed rapidly in wealth and population. In 1774 the Stamp Act, and the act levying a duty on tea, met with resolute and active opposition from the Marylanders, who, assembled in convention, abolished the Proprietary government, and substituted therefor a Committee of Public Safety. In 1776 a convention of the people adopted a bill of rights, and a constitution; in the following year, the first elected Legislature was convened at Annapolis, and in March, Thomas Johnson took office as the first republican governor. During the Revolution the Marylanders bore a highly distinguished part, participating in nearly every battle of the war. During the campaign of 1812, Maryland suffered severely from the naval operations of the British; Havre de Grace, Fredericktown, and other places being plundered and burned. The militia of the State as vainly opposed the march of the English army to Washington in 1814. In the same year occurred the battles of Bladensburg and North Point; in the former of which the enemy was successful, while in the latter the British General Ross was killed, and the Americans gained a slight advantage. An attack (Sept. 14-16) on Baltimore by the enemy's fleet was successfully repelled. At the outbreak of the Civil War, in 1861, the Marylanders were divided in sentiment, many of the people being in sympathy with the Confederates, though the State remained loyal to the Federal cause. During a series of Confederate invasions from Virginia during the protraction of the war, the State became the theater of important military operations and sanguinary engagements. Maryland is one of the few States of the Union that rejected the ratification of the 15th Amendment to the Constitution of the United States. In 1867, a new constitution was adopted, making several important changes in the organic law of the State. In the year 1880, Baltimore celebrated its 150th anniversary with a week of festivities, and in 1884 the 250th anniversary of the landing of the colonists was celebrated. In 1891, a monument was erected to Leonard Calvert, the first governor, on the site of the old city of St. Mary's, the first capital of the State, of which scarcely a trace remains.

MARYLAND AGRICULTURAL COLLEGE, an educational institution supported by the State of Maryland, situated at College Park, Md. It includes faculties of chemistry, biology, horticulture, mechanical, civil, and electrical engineering. In 1912 a fire destroyed many of the old buildings, and temporary structures have been erected to serve until the new buildings, now in the course of construction, have been completed. The college has no endowment and is dependent upon the appropriations granted by the State of Maryland and the United States Government. In 1919 the college had about 600 students, the faculty numbering 42.

MARYLAND, UNIVERSITY OF, a non-sectarian institution for both sexes, located at Annapolis and Baltimore. It was founded in 1807. In 1919 the faculty members numbered 211 and about 1,400 students were enrolled. The University has an income from invested funds of $150,000 and some $50,000 are derived from other sources. The University li brary contains about 25,000 volumes.

MARYSVILLE, a county-seat of Yuba co., Cal., on Yuba and Feather rivers, the southern Pacific railroad, 52 miles N. of Sacramento. Has considerable navigation and trade, and contains Notre Dame College, and buildings in the Spanish style. Iron foundries, fruit canneries, woolen mills, and gold dredging employ many hands. Pop. (1910) 5,340; (1920) 5,461.

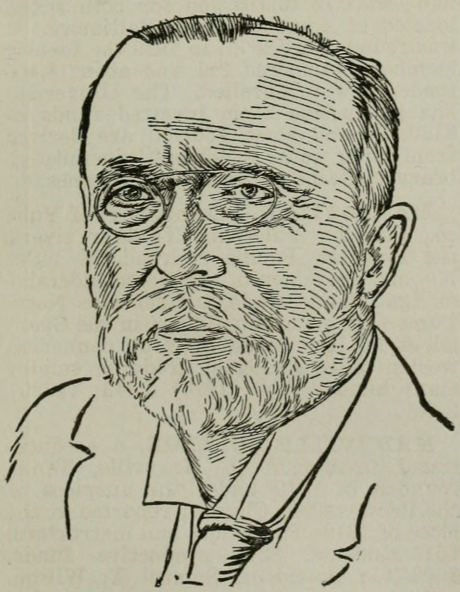
MARYVILLE COLLEGE, a coeducational institution in Maryville, Tenn., founded in 1819 under the auspices of the Presbyterian Church; reported at the close of 1919: Professors and instructors, 60; students, 826; productive funds, $803,701; president, Samuel T. Wilson.

MASAI (mä-sī'), a people of British East Africa, dwelling in a district that includes Kilimanjaro, Kenia, and Lake Baringo. The S. half of the district is low and barren, with no rivers and little rain, while in the N. it rises into a plateau region (5,000 to 9,000 feet), rich

in running streams, forests, and grass land. The Masai are not a Negro or Bantu race; they resemble the Gallas, being men of magnificent stature and Apollo-like forms, though their faces are ugly and ferocious in expression. After marriage, which takes place when they lay aside the habits of the warrior, they settle down as cattle breeders. They are an aristocratic race, and clever public speakers. The work is done by slaves and by the women and boys. They speak a Hamitic language.

MASANIELLO (mä-sä-nyel'lō), the commonly received name of TOMMASO ANIELLO, a fisherman of Naples; born in Amalfi, in 1623. He headed the populace in their revolt against the Spanish viceroy in 1647, when only 24 years of age. His career lasted but nine days, in which time he had 150,000 men under his orders, and was elevated to sovereign authority. He was murdered by four assassins armed with arquebuses at Naples, July 16; and, as the resistance he commenced never ceased till the Spanish yoke was broken, he has since been venerated as the liberator of his country.

MASARYK, THOMAS GARRIGUE, first President of the Czecho-Slovak Republic, and chief of the nationalist move-



THOMAS G. MASARYK

ment which led to the establishment of the Republic. He was born in Göding, Moravia, 1850, received only an elementary education, and was then apprenticed to a blacksmith. Through individual effort he gained further education and finally entered the University of Leipsic, where he subsequently taught. In 1882 he became professor of philosophy at the new Czech University at Prague. In 1891 he was elected to the Austrian Parliament, where he gained prominence by his criticism of the Austrian policy in Herzegovina. In 1893 he resigned, in protest against the inactivity of the Czech nationalist movement. He then came to the United States and lectured for a time at the University of Chicago. In 1907 he returned to Prague, where he remained until December, 1914, when he was compelled to flee to Italy, on account of his activities in favor of a nationalist movement, for which reason he was sentenced to death by the Austrian Government. During the war he represented the Czecho-Slovak nationalist organization in Paris, London, and Washington, D. C., and gradually gained the recognition of the Czecho-Slovak nation from the Allied countries. In 1917 he went to Russia, at the urgent call of Paul Milyukoff, whence he proceeded to Tokio, Japan, and back to Washington, D. C. In October, 1918, he was formally proclaimed President of the Czecho-Slovak Republic. He immediately proceeded to Prague, where he took his oath of office on December 21, 1918. In politics he was liberal in his tendencies, but strongly nationalistic.

MASAYA, a town in Nicaragua, 10 miles from Lake Nicaragua. Tobacco, coffee, and sugar are products of the vicinity. Has large hat factories. Pop. about 13,000.

MASBATE (-bä'tā), an island of the Visayan group in the Philippine Islands, constituting a province; area, 1,732 square miles; pop. (1920) about 30,000, including 66 dependent islands. It is under a civil government in accordance with the provincial organization act of 1901. Lignite and gold are found, and a leading industry is the manufacture of sugar sacks.

MASCAGNI, PIETRO (mäs-kän'yē), an Italian composer; born in Leghorn, Tuscany, Dec. 7, 1863. He produced, after a somewhat irregular musical education, the brilliantly successful one-act opera "Cavalleria Rusticana" (Rustic Gallantry) in 1890, in competition for a prize, the plot being taken from a story by Verga. Later operas were "Friend Fritz" (1891); "The Rantzaus" (1892); "Amica" (1905); "Isobel" (1911); "L'Alodoletta" (1913). He made a financially disastrous tour of the United States in 1905.

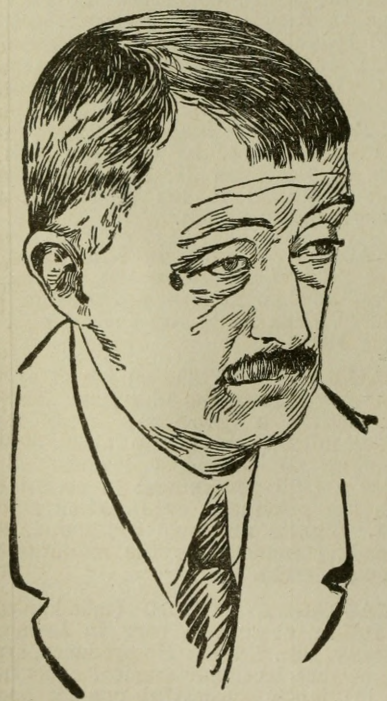
MASCALONGE (*Esox nobilior*), a fine North American fresh-water fish of the pike genus, inhabiting the St. Lawrence basin, but also introduced into other waters.

MASCARA (mäs-kä-rä'), a town in Algeria, picturesquely situated on the S. slope of Mount Atlas, 48 miles S. E. of Oran. It was a stronghold of Abd-el-Kader, and was taken by the French in 1835 and 1841. Pop. about 25,000.

MASCARENE (mäs-ka-rēn') **ISLANDS**, the islands of Bourbon, Mauritius, and Rodriguez, so called from Mascarenhas, a Portuguese navigator, who discovered Bourbon in 1545.

MASCOT, one who or that which is supposed to bring good luck.

MASEFIELD, JOHN, English poet; born in 1875. Spent much of his early life on the sea, and engaged in different occupations in New York and London.



JOHN MASEFIELD

He began to write verse when young, winning prizes. In 1913 was elected member of Academic Committee. His poems based on his experience at sea have made him best known. Works include: "Salt Water Ballads"; "A Mainsail Haul'; "A Tarpaulin Muster"; "Ballads"; "Captain Margaret"; "The Tragedy of Man"; "The Tragedy of Pompey the Great"; "Multitude and Solitude"; "The Street of To-Day"; "Poems and Ballads"; "William Shakespeare"; "The Everlasting Mercy"; "The Widow in the Bye-Street"; "Dauber."

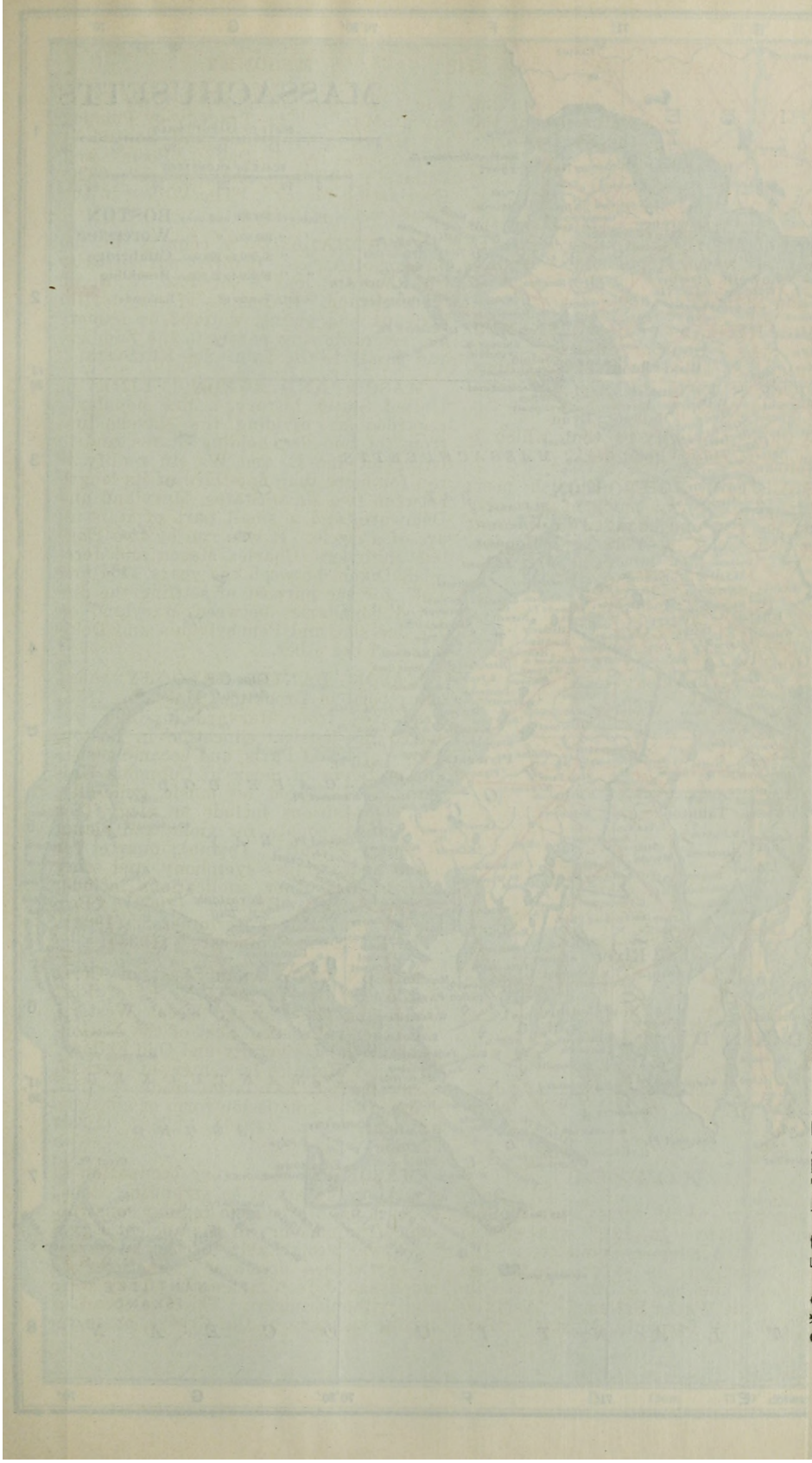
MASHONALAND, a country in the interior of Africa. It forms part of British Rhodesia, and is situated N. E. of Matabeleland. It consists of very fertile plateaux and plains, watered by numerous rivers flowing partly to the Zambezi and partly to the Sabi. See RHODESIA.

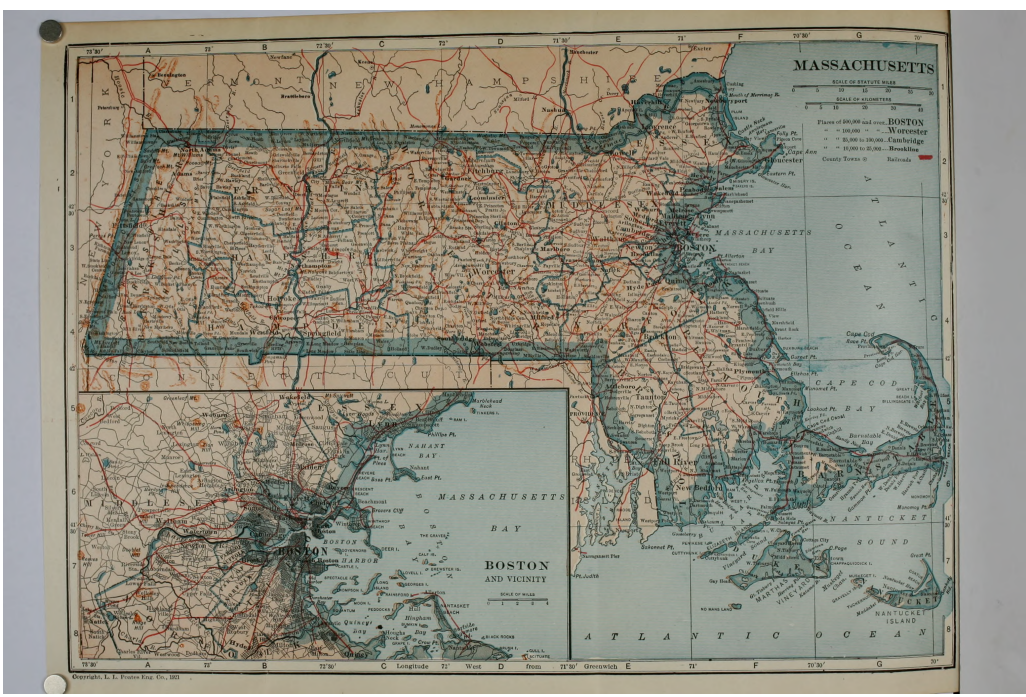
MASON AND DIXON'S LINE in United States history, a line popularly regarded as dividing the slaveholding from the non-slaveholding States, and to have run due E. and W. In reality it ran for more than one-third of its length between two slave States, Maryland and Delaware, and a small part of it is an arc of a circle. It was run by two English engineers, Charles Mason and Jeremiah Dixon, between the years 1764 and 1767, for the purpose of settling the disputed boundaries between Maryland on the one side and Pennsylvania and Delaware on the other.

MASON, DANIEL GREGORY, musician; born in Brookline, Mass., in 1873; graduated from Harvard in 1895; received his musical education in Boston, New York, and Paris, and became assistant professor of music at Columbia University. Lectured on music generally. His compositions include an elegy (for the piano); sonata for violin and piano; "Country Pictures" (piano); quartet for piano and strings; symphony, and other works. His other publications include: "From Grieg to Brahms" (1902); "Beethoven and His Forerunners" (1904); "The Romantic Composers" (1906).

MASON CITY, county-seat of Cerro Gordo co., Ia., 72 miles N. E. of Fort Dodge, on the Chicago Great Western, and other railroads. Seat of the National Memorial University and Odd Fellows' Orphans' Home. Is center of agricultural district, has large trade in fruit and grain. Commission form of city government. Pop. (1910) 11,230; (1920) 20,065.

MASONRY, the art or occupation of a mason; the art of so arranging stones or brick as to produce a regular construction. The masonry of the ancient Egyptians was remarkable for the large size of the stones employed, sometimes as much as 30 feet in length. They were laid without mortar. The Cyclopean or earlier masonry of the Greeks, some re-





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mains of which exist in the walls of Mycenæ and Tiryns, was formed of large and irregularly shaped masses of stone, the interstices being filled with smaller stones. In a few of the earlier English buildings, considered by some to be Saxon, the quoins, the door, and window jambs, and occasionally some other parts, were formed of stones alternately laid flat and set up endwise; the latter were usually much longer than the others. This is termed "long and short" work.

MASONRY. See FREEMASON.

MASON SPIDER (*Mygale* or *Cteniza cæmentaria*), a spider more commonly known as the "trap-door spider."

MASPERO, GASTON CAMILLE CHARLES (mäs-pe-rō') a French Egyptologist; born of Italian parents, in Paris, France, June 23, 1846. He began to lecture on Egyptology at the School of Higher Studies in Paris in 1869, and in 1873 was appointed Professor of Egyptology at the College of France. In 1881 he founded a school of Egyptian archæology at Cairo, and succeeded Mariette as director of explorations and custodian of the Boulak Museum. In 1886 he became professor at the Institute of Paris. As an explorer he excavated or opened the pyramids of the kings belonging to the 5th and 6th dynasties and other important sites. His most valuable written work includes the excellent "Ancient History of the Nations of the Orient"; "Egyptian Archæology" (1887; Eng. trans. 1887); "Popular Tales of Ancient Egypt" (1882); "Egyptian Studies" (1879-1882); "New Light in Ancient Egypt" (1909); "Egyptian Art" (1912). He died in 1916.

MASQUERADE, an assembly of persons masked and disguised by means of fantastic dress. See CARNIVAL.

MASS, the measure or expression of quantity of matter in a body as indicated either by its weight or by the amount of force necessary to produce a given amount of motion in a body in a given time. See PHYSICS.

MASS, in Roman Catholic theology and ritual, "the perpetual sacrifice of the new covenant, in which the body and blood of Jesus Christ are really and truly offered to God under the species of bread and wine." According to the "Catechism of the Council of Trent," the Sacrifice of the Mass was instituted by our Lord at His last supper (Luke xxii: 19); it must be offered to God alone; was signified in Malachi i: 11; is the same sacrifice with that of the Cross; there is one priest of both, for the celebrant uses not his own words, but those of Jesus Christ; it is a sacrifice of praise and propitiation, and available for the living and the dead. There is an obligation on all Christians of the Roman Obedience to hear mass on all Sundays and holy days of obligation.

MASS, in music, a setting of certain portions of the mass to music; the portions of the mass usually set to music—namely, the Kyrie, the Gloria, the Credo, the Sanctus, and the Agnus Dei. An Offertory and Benedictus are sometimes added to these numbers. Masses are designated musically after the key in which they commence, as Beethoven in d; and liturgically, according to the character and solemnity of the accompanying ceremonial.

MASSA, a city in Italy, 26 miles N. of Pisa. Extensive marble quarries are located near here, and the city also is important for its manufactures of silk and paper. Pop. about 30,000.

MASSACHUSETTS, a State in the North Atlantic Division of the North American Union; bounded by Vermont, New Hampshire, Connecticut, Rhode Island, New York, and the Atlantic Ocean; one of the original 13 States; number of counties, 14; area, 8,040 square miles; pop. (1890) 2,238,943; (1900) 2,805,346; (1910) 3,366,416; (1920) 3,852,356; capital, Boston.

Topography.—The surface of the State is mostly rough and rugged, with irregular mountain systems. The coast counties are, however, mostly level, with low, rounded hills, and rocky eminences on the coast. Cape Cod is a low, sandy arm of land extending in a semicircle around Cape Cod Bay. There are numerous salt marshes in the E. part of the State. The W. part of Massachusetts is traversed by two mountain chains, the Taconic and the Hoosac, the latter a continuation of the Green Mountains of Vermont. Between these ranges is the Hoosac valley, which at its N. end is 1,100 feet above the sea. Mount Greylock and Mount Washington are the highest points of the State; the former has an altitude of 3,505 feet and the latter 2,624 feet. A rugged tableland 1,000 feet high extends E. from the Hoosac range to the Connecticut river valley, with a series of trap ridges reaching their highest elevations in Mount Tom (1,200 feet) and Mount Holyoke (1,120 feet). The valleys of the Connecticut and Housatonic are noted for their beautiful scenery. The coast line is very irregular, being indented by numerous bays, the largest of these being Massachusetts, Cape Cod, and Buzzards, all of these affording excellent harbors. The Connecti-

cut, with its tributaries, the Westfield, Deerfield, Millers, and Chicopee rivers, forms the principal river system of the State. The Blackstone, Hoosac, Housatonic, Charles, Nashua, Taunton, and the Merrimac are large and navigable streams.

Geology.—The rocks of Massachusetts are largely of metamorphic nature. The sands of the E. portion and Cape Cod are of glacial deposit. The rocks in the E. are of the Laurentian, Cambrian, and Carboniferous periods, and the Connecticut valley is largely Triassic. The mountains in the W. are chiefly of Silurian origin. The sandstones of the Connecticut valley are rich in fossil footprints.

Mineral Production.—The most important mineral product is stone, especially granite. The value of the stone production is about $4,000,000 annually. Clay products are valued at about $2,000,000. The total value of mineral products is about $7,000,000 per year. The State ranks first in the production of granite.

Soil.—Most of the soil is too rocky for cultivation and is suited only for pasturage. In the central counties and in the river valleys the soil is more fertile, and agriculture is carried on to a small extent, the principal crops being garden vegetables, dairy products, hay, maple sugar, and cranberries. Of the latter, the sandy coast plains produce over 300,000 bushels annually.

Agriculture.—The State is not an important producer of agricultural products, as its chief importance is industry. The production and value of the principal crops in 1919 was as follows: corn, 2,640,000 bushels, valued at $4,541,000; tobacco, 15,400,000 pounds, valued at $7,130,000; hay, 656,000 tons, valued at $17,712,000; potatoes, 2,970,000 bushels, valued at $5,643,000. The statistics of live stock are as follows: horses, about 65,000, valued at about $10,000,000; milch cows, about 160,000, valued at $10,500,000; cattle, about 85,000, valued at about $2,200,000; sheep, about 30,000, valued at about $175,000; swine, about 110,000, valued at about $1,700,000. The production of wool is about 130,000 pounds yearly.

Manufactures.—Massachusetts is preeminently a manufacturing State. The abundant water supply and transportation facilities give the State opportunities for the most varied manufactures. Lowell is noted as the largest carpet milling city in the United States. Worcester has the largest steel wire works in the world, and Holyoke ranks first in paper manufacturing, North Easton in shovels, and Lynn in electrical instruments. Lawrence is noted for its cotton and woolen mills; Haverhill, for shoe factories; Dalton, for note paper; Taunton, for cotton and silverware; Chicopee, for bronzes, automobiles and cotton; Roxbury, for rubber goods; Wakefield, for rattan; and many other cities and towns have individual industries. In 1914 there were in the State 12,013 manufacturing establishments. The wage earners numbered 606,698. The capital invested amounted to $1,548,961,000. There were paid in wages $341,310,000, and the value of the materials used amounted to $931,384,000, and the value of the completed products amounted to $1,641,373,000.

Banking.—On Oct. 31, 1919, there were reported 159 National banks in operation, with $54,292,000 in capital, $21,306,950 in outstanding circulation, and $20,747,200 in United States bonds. There were also 196 mutual savings banks, with $1,089,550,000 in deposits, and 104 trust and loan companies with $37,406,000 capital and $31,661,000 surplus.

Education.—The total enrollment for the public schools of the State in 1918 was 607,805. The average daily attendance was 506,478. The teachers, supervisors, and principals numbered 19,609. The State has always been notable for its progress in educational matters. Attention has been given in recent years to vocational education. There are many excellent private schools. The colleges include Harvard University, Amherst College, Williams College, Holy Cross College and Boston University. For women there are Mount Holyoke College, Smith College, and Wellesley College.

Charities and Corrections.—The State takes abundant care of its dependents. The charitable and correctional institutions in the State include the State Infirmary at Tewksbury, the State Farm at Bridgewater, the Norfolk State Hospital, the Lyman School for Boys at Westboro, the Industrial School for Boys at Shirley, the State Industrial School for Girls at Lancaster, and several sanitaria. The prisons include the State Prison in Boston, the Massachusetts Reformatory at Concord, the Reformatory for Women at Sherburn.

Churches.—The strongest denominations in the State are the Roman Catholic; Congregational, Regular Baptist; Methodist Episcopal; Unitarian; Protestant Episcopal; Spiritualist, and Universalist.

Finances.—The total receipts for the fiscal year 1917 amounted to $55,402,628. Expenditures amounted to $56,062,128. At the close of the year there was a cash balance of $11,526,346. The funded debt of the State amounted to $126,555,662.

Railroads.—The total mileage in the State for 1919 was 4,936 miles, of which about 2,141 miles was main track. The roads having the longest mileage were the Boston & Albany and the New York, New Haven and Hartford railroads.

State Government.—The governor is elected for a term of one year. Legislative sessions are held annually beginning on the first Wednesday in January, and are not limited as to length of time. The legislature has 40 members in the Senate and 240 in the House. There are 16 representatives in Congress. The State government in 1920 was Republican.

History.—The history of Massachusetts begins with the landing of the Pilgrims at Plymouth in 1620, though it is probable that portions of the coast were temporarily settled by Norwegians as early as A. D. 1000. In 1628 another colony was established at Salem, and both were united under one government with Maine in 1692. In 1675, an Indian chief, named Philip of Pokaneket, or King Philip, began a war which had for its object the entire extermination of the English. This war lasted three years, and ended by the death of King Philip himself. From this time till the Revolutionary War Massachusetts enjoyed a period of comparative peace and prosperity. When the oppressive measures of the English Parliament finally brought about the rupture with the colonies, none took a more active or more prominent part than Massachusetts in the National cause. The passage of the Stamp Act aroused the wildest excitement; and its repeal the following year was received with demonstrations of joy. The arrival of the "Romney" man-of-war renewed the excitement, and Massachusetts issued a circular letter to the colonies, which the British ministry in vain commanded the authorities to rescind. Then followed the Boston massacre in 1770, the destruction of the tea in 1773, and the Port Bill in 1774. The Revolutionary War had its outbreak in Massachusetts, the bloodshed at Lexington and the contest of Concord being the instigative incidents that led to the war. Its earliest event was the siege of Boston, made notable by the battle of Bunker Hill, the acceptance of the command by Washington at Cambridge, and the evacuation by the British. In 1780 a constitution was framed for the State, and adopted by popular vote. In 1786 the tranquillity of the State was again disturbed by a party of rioters, who, under the leadership of Daniel Shays, attempted to resist the authorities, but the revolt was suppressed. On the breaking out of the Civil War in 1861 Massachusetts was among the first to offer assistance to the National cause; and, till the final success of the Federal army, continued to perform a patriotic and liberal part.

MASSACHUSETTS AGRICULTURAL COLLEGE, a non-sectarian institution in Amherst, Mass.; founded in 1863; reported at the close of 1919: Professors and instructors, 75; students, 500; volumes in the library, 61,439; income, $732,000; president, Kenyon L. Butterfield.

MASSACHUSETTS BAY, a large bay to the E. of the central part of Massachusetts; bounded on the N. by Cape Ann, and on the S. by Cape Cod.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, a non-sectarian institution in Cambridge, Mass.; founded in 1865; reported at the close of 1919: Professors and instructors, 125; students, 3,073; volumes in the library, 132,921; productive funds, $9,500,000; income, $430,000; president, E. F. Nichols.

MASSAGE (mass'ij), a scientific method of curing disease by systematic manipulations comprising: (1) Surface friction (*effleurage*); (2) A form of kneading (*pétrissage*); (3) Manipulations with the tips of the fingers (*massage à friction*); and (4) A kind of striking or percussion with the hands (*tapotement*). These procedures are combined according to definite rules, and the treatment is found useful in paralysis, neuralgia, rheumatism, joint diseases, etc. It is used among the Sandwich Islanders under the name of *lomi-lomi*, and in Tonga is called *toogi-toogi, mili, or fota.*

MASSASOIT, Indian chief; born in Massachusetts about 1580. His dominions comprised the district in the S. E. part of Massachusetts between Cape Cod and Narragansett Bay. In March, 1621, three months after the landing of the Pilgrims, he sent a warrior named Samoset to Plymouth who shouted in English, which he had learned from Penobscot fishermen, "Welcome Englishmen!" Later Massasoit visited the Pilgrims in person and arranged a treaty of friendship in which both sides promised to refrain from all overt and hostile acts and to aid each other if either were unjustly attacked. This promise was faithfully kept for 54 years. Massasoit died near the present Warren, R. I., in 1660.

MASSAUA, or **MASSOWA** (-sou'ä), Abyssinian MUTUGNA or MUTOGNA; called by the people of Tigre Baze, a fortified seaport town in Africa; formerly capital

of the Italian colony of Eritrea; situated partly on the mainland and partly on a sterile coral island in the Red Sea, one mile in circumference and 200 yards from the mainland. Massaua is surrounded by islets, which make navigation very difficult; is a place of exchange for the products and merchandise of Abyssinia and the Sudan and those of India and Europe; chief trade in ivory, coffee, tobacco, and ostrich feathers. It is connected with Asmara, the capital of the colony, by railway. Formerly an Egyptian possession, it was taken by Italy in 1885. Pop. about 2,500.

MASSÉNA, ANDRÉ (mä-sā-nä'), **PRINCE OF ESSLING, DUKE OF RIVOLI**, a French military officer; born in Nice, May 6, 1758. He went through the regular gradations in an Italian regiment, commencing his military career at the age of 17. After 14 years' service he obtained his discharge; but in 1792 the French revolution caused him to enter the service of the French republic. He had the chief command in Switzerland in 1799, when he finished the campaign by completely routing the Austro-Russian army under the Archduke Charles and General Korsakoff. In 1800 he commanded in Italy, but with less success than in his former campaigns. He was, however, again successful in the campaigns of 1805 and 1806, taking possession of Naples, and signalizing himself in the campaign of Poland which was terminated by the treaty of Tilsit. In 1810 he was appointed Commander-in-Chief of the army in Portugal. Masséna began, March 5, 1811, his celebrated retreat in Spain, entering Salamanca in the latter part of April, after having lost 30,000 men within six months. On May 5 he fought the bloody but indecisive battle of Fuentes d'Onoro; and soon after, on account of ill-health he resigned his command and returned to France. He gave his adhesion to the Bourbons after the restoration; became Commander-in-Chief of the National Guard of Paris, and died in Paris, April 4, 1817.

MASSENET, JULES ÉMILE FRÉDÉRIC (mäs-nā'), a French composer; born in Montaud, France, May 12, 1842. He won the "Prix de Rome" in 1863, was favorably received as the composer of meritorious orchestral works and a comic opera, "The Great Aunt" (1867), before the Franco-Prussian War, and in 1873 took his place among the foremost of the younger composers of France, his fame being established by the comic opera "Don Cæsar de Bazan" (1872), the classical opera "The Furies" (1873), and the oratorio "Mary Magdalen" (1873). These were followed by the oratories "Eve" (1875) and "Virgin" (1879), the great operas "King of Lahore" (1877), "Herodiade" (1881); "Manon Lescaut" (1884); and "Esclairmonde" (1889); "Thais" (1894); "Le Jongleur de Notre-Dame" (1902); "Sapho" (1907); "Bacchus" (1908); "Roma" (1912); "Cléopâtre" (posthumus, 1914). He died in 1912.

MASSEY, WILLIAM FERGUSON, Prime Minister of New Zealand and Minister of Lands and Labor since 1912. Born at Limavady, Ireland, in 1856. Educated at public schools. Emigrated to New Zealand in 1870 and followed farming. Was early associated with local government as President of Agricultural Societies, Farmer Clubs. Represented Waitemata in the New Zealand Parliament, 1894. Member for Franklin, 1896. Leader of the Opposition, 1903. Held offices as Minister of Land, Labor, Agriculture, Industry, and Commerce. A representative of New Zealand at the Imperial War Cabinet and Conference in 1917-1918.

MASSICO (mass'-) (Mons Massicus), a mountain in the province of Terra di Lavoro, Naples, Italy, and having on its slopes a town of the same name. Massic wine has been famous from remote times.

MASSIGES, a French hamlet in the department of the Marne. Before the World War of 1914-1918 the population was 153. It was the center of intense struggles between the Germans and the forces of the Allies.

MASSILLON, a city in Stark co., O.; on the Tuscarawas river, the Ohio canal, and the Wheeling and Lake Erie, the Pensylvannia and the Northern Ohio Traction and Light Co. railroads; 8 miles W. of Canton, and 55 miles S. of Cleveland. It is located in the famous Tuscarawas valley coalfield. There are electric light and street railroad plants, waterworks, business college, high school, National banks, and daily and weekly newspapers. It is the seat of the State hospital and Asylum for the Insane, and has machine shops, rolling mill, extensive agricultural implement works, bridge works, glass works, foundry, pottery, etc. Pop. (1910) 13,879; (1920) 17,428.

MASSINGER, PHILIP (mas'in-jer), an English dramatist; born in Salisbury, England, November, 1583. He studied at Oxford, but quitted the university without taking a degree, and repaired to London about 1606. As a dramatist Massinger is more natural in his characters and poetical in his diction than Jon-

son, and some critics rank him next to Shakespeare. His best plays are the "Duke of Milan," "A City Madam," "A Very Woman," "The Fatal Dowry," "A New Way to Pay Old Debts." He died in London, in March, 1640.

MASSON, DAVID, a Scotch author; born in Aberdeen, Scotland, Dec. 2, 1822; educated at Marischal College, Aberdeen, and at the University of Edinburgh; became editor of Scotch provincial paper, and later joined the literary staff of W. & R. Chambers. In 1847 he settled in London, writing for the reviews, the "Encyclopædia Britannica," and the "English Encyclopædia." In 1852 he succeeded Clough in the chair of English literature in University College; in 1865 became Professor of English Literature in the University of Edinburgh, a post he resigned in 1895. Masson edited "Macmillan's Magazine" from 1859 to 1868. His first published work was his "Essays, Biographical and Critical" (1856), reprinted with later essays in three volumes (1874-1876). His great work is his ponderous "Life of John Milton" (6 vols. 1859-1880). Other works are "British Novelists and their Styles" (1859); "Recent British Philosophy" (1865); the "Cambridge" edition of "Milton," with introductions, notes, and an essay on Milton's English (3 vols. 1874; new ed. 1890), the "Golden Treasury" edition (2 vols. 1874), and the "Globe" edition (1877). Later works are "De Quincey" (1878) in the "Men of Letters" series, and his edition of De Quincey's works (14 vols. 1889-1891). In 1893 he became Historiographer Royal. He died Oct. 7, 1907.

MASTER, in the navy, an officer who navigates a ship under the direction of the captain; he is selected from the list of lieutenants when he has qualified for the special duty. Also the captain of a merchant vessel.

MASTER OF ARTS (abbreviated M. A. and A. M.), a degree conferred by universities and some colleges.

MASTER SINGERS. See MEISTERSINGERS.

MASTERS, EDGAR LEE, lawyer and writer; born in Garnett, Kan., in 1869, he was educated at Knox College, Ill., and studied law in his father's office. He was admitted to the bar in 1891, and became a member of the Chicago and Illinois State Bar associations. His first work, "A Book of Verses," appeared in 1898. Then followed "Maximilian" (drama in blank verse, 1902); "The New Star Chamber and Other Essays" (1904); "Blood of the Prophets" (1905); "Althea" (a play, 1907); "The Trifler" (a play, 1908); "Spoon River Anthology" (1915); "Songs and Satires" (1916); "The Great Valley" (1916); etc.

MASTIFF, a variety of dog of an old English breed, probably peculiar to the British Isles. It is the *Dogue de forte race* of Buffon, the *Canis molossus* of Linnæus, *C. mastivus* of Ray, and *C. villaticus* or *catenarius* of Caius. The head resembles that of the bulldog, but with the ears dependent. The upper lip falls over the lower jaw. The end of the tail is turned up, and the fifth toe of the hind food is frequently developed. The nostrils are separated by a deep furrow. The bark is deep-toned, and the aspect of the animal grave and noble.

MASTODON (mas'-), an extinct genus of proboscideans, closely allied to the true elephants. The crowns of the molar teeth have nipple-shaped tubercles placed in pairs, and from the number of these projections Falconer divided the genus into groups: (1) Trilophodon, and (2) Tetralophodon. Generally speaking, the two upper incisors formed long curved tusks, as in the elephants, but in some cases there were two lower incisors as well. The genus ranged in time from the middle of the Miocene period to the end of the Pliocene in the Old World, when they became extinct. In America several species—especially that which, from the abundance of its remains, is the best known, *M. ohioticus americanus*, or *giganteus*—survived to a late Pleistocene period.

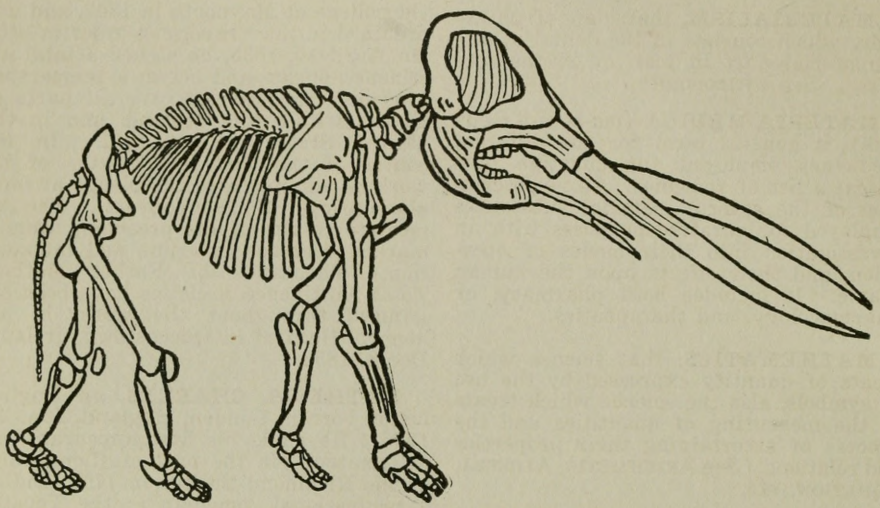
In 1897 the skeleton of a mastodon, the largest yet discovered, was unearthed on a farm near New Paris, O. It was found in what had evidently at one time been a morass, and was buried 10 feet below the surface, where from all indications it had lain for centuries. It was very nearly perfect, and though some of the bones crumbled away on exposure to the air, they were cleverly replaced. The mastodon is believed to have been for some time a contemporary of man.

MASULIPATAM (mä-sö"li-pä-täm'), the principal seaport of Kistna district, Madras, British India, 215 miles N. of Madras city. Here the English established an agency in 1611, and after 1628 it became the center of their trade in those parts. Since 1841 the town has been an active missionary center. In 1864 a storm wave swept over it and destroyed 30,000 lives. Pop. about 45,000.

MATABELELAND. See RHODESIA.

MATADOR, the individual who, at a bullfight, attempts to kill the bull with a thrust of a sword.

MATAGALPA, capital of the Matagalpa department, Nicaragua, 12 miles S. E. of Jinotega. On elevated plateau, in fertile agricultural region, has a large trade in coffee and tobacco. Pop. about 17,500.



SKELETON OF MASTODON

MATAMOROS (mä-tä-mō'rōs), a port of Mexico, opposite Brownsville, Tex., on the Rio Grande, 40 miles from its mouth in the Gulf of Mexico. With the other Mexican towns on the river it has formed a free-trade league since 1861. The Rio Grande is navigable for small vessels as far as Reynosa, and a railway from Matamoros extends beyond this point to San Miguel (75 miles). Pop. (1920) about 10,000. Another Matamoros is in the Mexican state of Puebla, 4,100 feet above sea-level. It has coal mines.

MATANUSKA, a river in Alaska, emptying into Cook Inlet at Kink Arm. The valley of the river is important because of its rich coal deposits, the United States Government having undertaken to construct railroads for their development. A large part, 7,680 acres in extent, is to be reserved for exclusive government use.

MATANZAS (mä-tän'thäs), a seaport on the N. W. coast of Cuba, capital of the province of the same name, 52 miles E. of Havana, with a large, safe, and convenient harbor; has considerable commerce, exporting sugar, molasses, and coffee, and ranking in importance next to Havana. Following American intervention, Matanzas greatly increased in prosperity. It is the third city in Cuba in population. On April 27, 1898, the forts protecting Matanzas harbor were shelled and destroyed by the United States warships "New York," "Cincinnati," and "Puritan." Pop. about 65,000. The province of Matanzas is one of the six territorial Cuban divisions; area, 3,700 square miles; pop. about 270,000.

MATCH, anything which readily catches fire, either from a spark or by friction, and is used for conveying, communicating, or retaining fire; specifically, a splint or strip of combustible material, usually wood, one end of which is dipped in a composition that ignites by friction.

MATCHLOCK, an old form of musket fired by means of a match. They were invented in the first half of the 15th century, and were succeeded by the arquebus.

MATÉ (mä'tā), the plant that yields Paraguay tea, the *Ilex Paraguayensis*, a kind of holly, natural order *Aquifoliaceæ*. It has smooth, ovate-lanceolate, unequally serrated leaves, much branched racemes of flowers, the subdivisions of which are somewhat umbellate. In Brazil and other parts of South America the leaves are extensively used as a substitute for tea, the name maté having been transferred to the plant from the gourd or calabash in which the leaves are infused. Boiling water is poured upon the powdered leaves, then a lump of burned sugar and sometimes a few drops of

lemon juice was added. Usually the infusion is sucked through a tube, sometimes of silver, having a perforated bulb to act as a strainer at the lower end. It contains theine, and acts as a slight aperient and diuretic.

MATERIALISM, that view of philosophy which consists in the denial of any immaterial part in man or in the universe. See PHILOSOPHY.

MATERIA MEDICA (ma-tē'ri-ä med'-i-kä), a general term for the different medicines employed for curative purposes; a list of remedies. Also a description of the several material substances employed for curative purposes with an investigation into their modes of operation, and their effects upon the human frame. It includes both pharmacy, or pharmacology, and therapeutics.

MATHEMATICS, that science which treats of quantity expressed by the use of symbols, also the science which treats of the measuring of quantities and the process of ascertaining their properties and relations. See ARITHMETIC, ALGEBRA, EQUATION, etc.

MATHER, COTTON, an American clergyman; born in Boston, Mass., Feb. 12, 1663. After graduating at Harvard College, in 1678, and early manifesting a truly Puritan spirit of austerity, he devoted himself to theological studies, and, in 1684, was ordained as his father's colleague in the pastorate of the North Church, Boston. He distinguished himself as the self-called exterminator of witchcraft; in relation to which delusion he published, in 1685, his "Memorable Providences relating to Witchcraft and Possessions." Following this diatribe against demonology, appeared, in London, a discourse from his pen, pronouncing witchcraft "the most nefarious high treason against the Majesty on high," —with a preface by Richard Baxter. In 1692, he produced his "Wonders of the Invisible World." He died in Boston, Mass., Feb. 13, 1728.

MATHER, INCREASE, an American clergyman; born in Dorchester, Mass., June 21, 1639. Educated at Harvard College, where he took his degree, in 1656. In the following year he went to England, where he obtained preferment, and was greatly distinguished for his urbanity and integrity but in consequence of his Nonconformist opinions was obliged to return to his native colony, where he was appointed minister at Boston; in 1684, was elected president of Harvard College. He was the author of many theological works, a "History of the Indian War," and a "Discourse on Comets and Earthquakes." He died in Boston, Mass., Aug. 23, 1723.

MATHEW, THEOBALD, an Irish reformer; born in Thomastown Castle, near Cashel, Ireland, Oct. 10, 1790; entered the college at Maynooth in 1807, and was ordained in the Franciscan order in 1814. On April 10, 1838, he signed a total abstinence pledge and began a temperance crusade. He traveled over all parts of Great Britain and Ireland, and in the United States in 1849-1851. In the course of the first five months of his work he administered the pledge at Cork alone to over 150,000 converts. The immediate results of his preaching were a marked decrease in crime and intoxication. Thousands of Father Mathew Total Abstinence Societies have been organized throughout the world in his honor. He died in Queenstown, Ireland, Dec 8, 1856.

MATHEWS, CHARLES, an English actor; born in London, England, June 28, 1776. He made his first appearance as an amateur—in the part of Richmond—at the Richmond theater in 1793, and as a professional comedian in the Theater Royal, Dublin, the following year. He then served in the famous York company under Tate Wilkinson, and made his first appearance in London in May, 1803, at the Haymarket. In 1818 he took up the profession of "entertainer" and made an immense success with his "At Homes" and other entertainments. He died in Plymouth, England, June 28, 1835.

MATICO (-tē'kō), an astringent plant supposed to be *Artanthe elongata;* called also *Piper angustifolium.* It is applied in leaf or as a fine powder to stop hemorrhage from wounds or leech bites; sometimes also an infusion is taken internally.

MATILDA, "the Empress Maud," only daughter of Henry I. of England; born in London, England, in 1103. She married in 1114 the Emperor Henry V., and after his death in 1128 Geoffrey of Anjou, by whom she became mother of Henry, afterward Henry II. of England. There was civil war between her and Stephen, 1139-1147. She died in Notre Dame des Prés near Rouen, France, Sept. 10, 1167.

MATINS, the daily office of Morning Prayer in the Anglican communion. It is composed in part of the pre-Reformation offices of Matins and Lauds. In the Roman Catholic Church, the first portion of the Divine Office with which Lauds are usually associated.

MATRIX, in mining and geology, the rock or main substance in which any accidental crystal, mineral, or fossil is embedded.

MATSUKATA, MASAYOSHI, MARQUIS, Japanese statesman; born in Satsuma, Kagoshima, in the island of Kiushiu in 1835, he soon entered politics and took part in the movement for the tax reform of 1875. Five years later attained cabinet rank becoming minister of commerce, then minister of finance (1881), and president of the cabinet (1891). After a period of retirement he, in 1896, became head of the finance department and introduced gold standard. He later took much interest in the Red Cross Society and received the title of Marquis from the emperor.

MATSUMAI (mat-sö-mī'), a seaport of Japan, situated at the S. W. extremity of the island of Yesso, at the W. entrance to the strait of Tsugaru. Formerly the principal town of the island, it has in recent times been outstripped by Hakodate; generally called Fukuyama. Pop. about 15,000.

MATSUMOTO, a town of Japan on the island of Hondo, district of Nagano, 100 miles W. of Tokyo. It is situated on a fertile plain surrounded by mountains. The principal manufactures are silks, baskets, and preserved fruits. Pop. about 45,000.

MATSUOKA, YASUKOWA, Japanese statesman; born in Tokushima in 1846, he early secured a position in administrative affairs, becoming an official in the justice department when he was 25, and later going abroad to investigate methods of administering justice. He returned from Europe in 1887, entered the House of Peers in 1891, and was assistant minister of home affairs in 1894 and 1898. During the seven years ending in 1906 he presided over court of litigation, and has since been prominent in educational matters.

MATSUYAMA, a town of Japan in the western part of Shikoku Island, capital of the district of Shima and of the former province of Iyo. An interesting feature of the place is a large feudal castle once occupied by a daimyo, one of the few relics of feudal days which the Imperial Government has preserved. Pop. about 45,000.

MATSUYE (Japan), a town situated on an inlet of the Sea of Japan on the coast of the southwestern peninsula and of Hondo Island, 140 miles W. of Kyoto. It is the capital of the district of Shimane, once the province of Idzumo. An attractive and prosperous city of many temples, the chief industries are paper manufacture and the polishing of agates. Pop. about 40,000.

MATSYS, METSYS, or MASSYS, QUINTEN, a Flemish painter; born in Louvain, Belgium, in 1466. He quitted his native city in 1491 and went to Antwerp, when he was made master of the famous guild of painters of that city. The "Descent from the Cross," in the cathedral of Antwerp, is a favorable specimen of his work. His picture of the "Two Misers," at Windsor, is also much admired. He died in Antwerp in 1529.

MATTEAWAN, former village in Dutchess co., N. Y., combined with Fishkill Landing to form the city of Beacon (incorporated 1916), 1 mile E. of Hudson river, and 3 miles E. of Newburgh. Seat of the State Hospital for the Criminal Insane, and other hospitals. Has manufactures of hats, rubber goods, machine tools, air brakes, etc.

MATTER, the substance of which all bodies are constituted; that of which anything is made, formed or composed; constituent elements; material or substantial part of anything; essential nature; embodiment. Body; extended substance; that which is visible or tangible to the perceptive senses; that which fills space, and of which the macrocosm of nature, and all essential bodies consists. That which possesses the properties whose existence is revealed to us by our senses; that part of the universe which is neither mind nor force—substance. We know nothing of the essential or intimate nature of matter, and are only acquainted with its existence through its essential properties, which are: Divisibility, impenetrability, porosity, compressibility; to which may be added extension and figure, which belong also to space, and form the subject of geometry. The contingent properties of matter are mobility and weight. Matter in every form is capable of being moved from one place to another; and every substance is subject to the attraction of gravitation. But motion has reference to space, and weight to the attraction of other matter. The above are the general properties of matter, on which physical investigations depend. There are, however, various other qualities belonging to particular substances, or to matter in particular states, the consideration of which is important in mechanical philosophy. Among these the principal are elasticity, fluidity, hardness, rigidity, solidity.

MATTERHORN (mät'-) (in French Mont Cervin, in Italian Monte Silvio), a peak of the Alps between the Swiss canton of Valais and Piedmont, rising to the altitude of 14,705 feet. The actual peak was first scaled by Lord Francis Douglas, the Rev. C. Hudson, Hadow, and Whymper, with three guides, July 14, 1865, when the three first-named and one of the guides fell over a precipice and were killed.

MATTHEW, an apostle of Jesus, almost certainly the same as Levi, the son of Alpheus. (See Matt. ix: 9-13, Mark ii: 14-16, and Luke v: 27.) He was a "publican"—*i. e.*, a taxgatherer—who sat at the receipt of custom at Capernaum on the shore of the Sea of Galilee. Taxgatherers are rarely popular men; and, moreover, the money which Matthew raised was not for the Jewish, but for the Roman government, he was, therefore, regarded as outside the pale of society, and his companions, when he was called to the apostleship, were "publicans and sinners." After his call he figures in all the lists of apostles. (Matt. x: 3; Mark iii: 18; Acts i: 13.) Clement of Alexandria represents him as dying a natural death; much later tradition represents him as having been martyred.

The Gospel according to St. Matthew, the first of the four Gospels in arrangement, and long most universally held to have been the first in point of publication, though it is more probable that Mark came first and Matthew only second in point of time.

Eusebius fixes the date of its publication in the third year of Caligula, A. D. 41, but lived too late really to know; Irenæus is in favor of a later date, apparently 60. Rationalistic writers, who disbelieve in prophecy, place it after the destruction of Jerusalem.

In 1771 Williams attacked the authenticity of the first two chapters. He was followed by Stroth, Hesse, Ammon, Schleiermacher, Norton, etc. They were defended by Fleming, Griesbach, Hug, Credner, Paulus, Kuinoel, Neander, etc. All the old manuscripts and versions contain them, and they are quoted by the fathers of the 2d and 3d centuries.

MATTHEWS, (JAMES) BRANDER, an American author; born in New Orleans, La., Feb. 21, 1852. He was graduated at Columbia College in 1871, and from Columbia Law School in 1873, being admitted to the bar the same year. He soon turned to literature, taking especial interest in the drama, and made himself an authority on French dramatic literature; also wrote several clever comedies. He was one of the founders of the Authors' Club of New York, did valuable work in organizing the American Copyright League, and was a frequent contributor of essays and fiction to periodicals. Of his many writings the following books are the more important: "The Theaters of Paris"; "French Dramatists of the Nineteenth Century"; "Margery's Lovers, a Comedy"; "A Family Tree, and Other Stories"; "The Story of a Story"; "Tom Paulding"; "Studies of the Stage"; "Americanisms and Britisms"; "Vignettes of Manhattan"; "Introduction to the Study of American Literature"; "The Royal Marine"; "Tales of Fantasy and Fact"; "Outlines of Local Color"; and "A Confident Tomorrow"; "Study of the Drama" (1910); "A Book About the Theater" (1916); "These Many Years" (autobiography, 1917). He became Professor of Literature in Columbia University in 1892. In 1913 he was elected president of the National Institute of Arts and Letters.

MATTHIAS (mät-tē'äs), Emperor of Germany; born in Vienna, Feb. 24, 1557. In 1592 he commanded the army against the Turks in Hungary, and three years later became heir presumptive by the death of his brother Ernest. He was elected King of Hungary in 1607, King of Bohemia in 1611, and on the death of Rudolph in the following year he was chosen emperor. He died broken down by the sense of the calamities impending over his dominions, March 20, 1619.

MATTHIAS CORVINUS (-vē'nös), called the GREAT, King of Hungary and Bohemia; born in Klausenburg, March 27, 1443. He was the son of John Huniades. The enemies of his father confined him in prison in Bohemia; but, on regaining his liberty, he was elected King of Hungary, in 1458, when only 15 years of age. His election, however, was opposed by many of the Hungarian magnates, who offered the crown to Frederick III. The Turks, profiting by these divisions, invaded the country, but were expelled by Matthias, who compelled Frederick to yield to him the crown of St. Stephen. The war was afterward renewed, and Matthias, overrunning Austria, took Vienna and Neustadt; on which the emperor was obliged to make a peace in 1487. He died in Vienna, April 6, 1490.

MATTHISON, EDITH WYNNE, actress; born in Birmingham, England, in 1875, she was educated in King Edward's Grammar School and Midland Institute, and began at 21 to appear in musical comedy, later joining Ben Greet's company, playing leading parts in "The Three Musketeers" and "Money." Created

title rôle in "Everyman," and has appeared in Greek and mystery plays, old English comedies, and modern plays. In the United States in 1904 she appeared in Goldsmith's "She Stoops to Conquer," and she has done good work in the plays of her husband, CHARLES RANN KENNEDY (*q. v.*).

MATTO GROSSO (mät'tö gros'sö) ("dense forest"), an inland state of Brazil, bordering on Bolivia, second to Amazonas alone, in size and sparseness of population; area, 532,683 square miles; pop. about 125,000, nearly all Indians and blacks. Within this vast territory several great rivers rise, including the Madeira and the Paraguay; but in most parts there is a scarcity of water during the dry season. The vegetation is generally scanty, grass, bush, and low trees covering the sandstone plateau; high trees and rich vegetation are confined to the river valleys. The chief products are maté, sugar cane, and rubber. The gold and diamonds which formerly constituted the wealth of Matto Grosso have been exhausted, and agriculture (insufficient for the wants of the state) and cattle raising, with the gathering of medicinal plants by the Indians, are now the principal industries. The capital is Guyabá. The former capital, Matto Grosso, on the Guaporé, greatly decayed with the gold mining industry.

MATTOON, a city in Coles co., Ill.; on the Illinois Central, the Cleveland, Cincinnati, Chicago, and St. Louis railroads; 56 miles W. of Terre Haute, Ind. There are gas and electric light plants, waterworks, high school, public library, National banks, and daily and weekly newspapers. It contains the machine shops of the Cleveland, Cincinnati, Chicago, and St. Louis railroad; has broom factories, grist mills, grain elevators. Pop. (1910) 11,456; (1920) 13,552.

MATURIN (mä-tö-rēn'), a section of the Venezuelan state of Bermudez, W. of the Orinoco delta, and consisting almost entirely of llanos. The town Maturin, on the Guarapiche, has plantations of cacao, and a trade with the West Indies; its port is Colorado, 25 miles below, and a railway has been constructed to this point.

MATZOON (mat'-), a milk food used by the inhabitants of Armenia; prepared by exposing cows' milk in open vessels to a heat of 80° or 90° F., and when coagulation takes place the curd is broken up by a churning process, and a little salt is added.

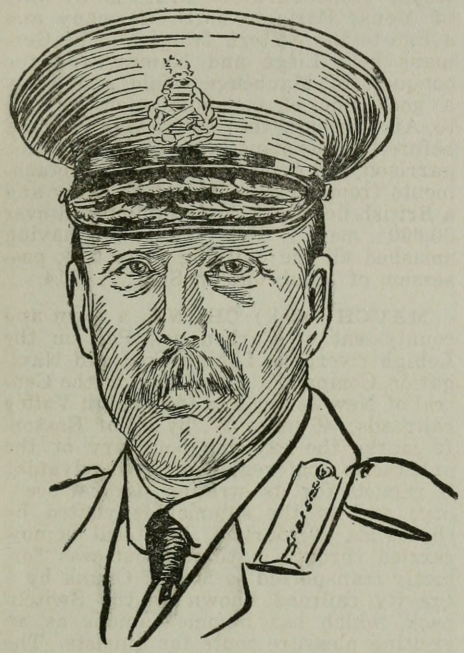
MAUBEUGE, France, a fortification of the first class on both sides of the Sambre river. Once the capital of Hainault, it passed to France in 1678. Was invested by a Prince of Saxe-Coburg in 1793, but was relieved in the battle of Wattignies. Population before the European War 25,120. A key point in 1914, when the German army drive was made toward Paris, owing to its position as the junction of several important railways; from Paris to Brussels by way of Mons; Paris to north Germany and a line to the eastern frontier. The Germans held Liège and Namur, and the conquest of Maubeuge would give them a good line of communication by rail to Aix through the Meuse valley. Just before the Germans invested the fort the garrison had been reinforced by detachments from Lanrezac's French army and a British field battery and numbered over 30,000 men. The Germans having smashed all the outlying forts took possession of Maubeuge on Sept. 7, 1914.

MAUCH (mâk) **CHUNK**, a town and county-seat of Carbon co., Pa., on the Lehigh river, the Lehigh Coal and Navigation Company's canal, and on the Central of New Jersey and the Lehigh Valley railroads; 46 miles W. by N. of Easton. It marks the extreme boundary of the anthracite coal region of Pennsylvania; is famous for its striking natural scenery; and in the summer is visited by thousands of tourists. The coal is now carried through a tunnel, but was formerly transported to Mauch Chunk by a gravity railroad known as the Switchback, which has become famous as an exciting pleasure route for tourists. The town contains a county building, Y. M. C. A. building, the Dimmick Memorial Library, electric street railroad, electric lights, National banks, and several daily and weekly newspapers. It has a number of foundries, a shoe factory, car shops, etc. Pop. about 4,000.

MAUDE, CYRIL, actor; born in London in 1862, he appeared in the United States in "East Lynne" in 1883. He scored much success in "Racing" in London in 1886 and joined Henry Arthur Jones's company. Was co-manager of the Haymarket, London, from 1895 to 1906, and until September, 1915, was manager of the Playhouse, which he rebuilt. In recent years has been starring in the United States, particularly in the title rôle of "Grumpy".

MAUDE, SIR FREDERICK STANLEY, born in England in 1864, was educated at Eton and Sandhurst, and entered army in 1884, becoming captain in 1896; major, 1899; lieutenant-colonel, 1907; colonel, 1911; and major-general

and divisional commander, 1915. Served in the Soudan and South African War, and in the World War, 1914-1917, being wounded and mentioned in dispatches seven times. Later he had command of the Tigris Army Corps, and from August, 1916, became commander-in-chief of the British Mesopotamian Expedition. The series of defeats which the British army had sustained up to that



GENERAL MAUDE

time at the hands of the Turks were checked by his appointment, and the advance toward a victorious end set in. General Maude was from 1901 to 1904 military secretary to the governor-general of Canada, and paid repeated visits to the United States. In March, 1917, he was made officer of the Crown of Italy, and died in the following November.

MAUGHAM, WILLIAM SOMERSET, author and dramatist; born in 1874. He was educated at King's School, Canterbury, Heidelberg University, and St. Thomas's Hospital, London. His first publication was "Liza of Lambeth," and this was followed in 1898 by "The Making of a Saint." Other novels include "The Hero," "Mrs. Craddock," "The Magician," and "Of Human Bondage." His plays have been "A Man of Honor," "Lady Frederick," "Jack Straw," "Mrs. Dot," "The Explorer," "Penelope," "Smith," "The Tenth Man," "Grace," "Loaves and Fishes," "The Land of Promise," and "Caroline."

MAUI ISLAND, one of the smaller of the Hawaiian islands.

MAULE, a province of Chile, on the Pacific coast. A good part of it is covered by mountains which yield abundant timber. The capital is Cauquenes. Pop. about 10,000.

MAULMAIN (mâl-mān'), or **MOULMEIN** (moul-mīn'), a town in the province of Tenasserim, Burma, near the mouth of the Salween river. There are numerous public buildings, churches, chapels, and missionary establishments, several charitable and educational institutions, barracks, a hospital, gaol, etc. The principal exports are teakwood and rice; the imports consist of general merchandise, chiefly piece goods, hardware, provisions, and sundries; is backed by a fine range of hills, on whose heights flash the gilded spires of innumerable pagodas; and here, too, are built many pretty residences, commanding a fine view of the town, river, and adjacent country, which for picturesque beauty and varied scenery has few equals. Pop. about 60,000.

MAUMEE RIVER, formed by the confluence of the St. Joseph and St. Mary rivers at Fort Wayne, Ind. It runs N. E. through Paulding co., O., and enters Lake Erie about 4 miles N. E. of Toledo, which city is situated on its banks. 150 miles long.

MAUNA LOA (mou'nä lō'ä), a volcano in the Sandwich Islands near the center of Hawaii; height, 13,600 feet.

MAUNDY THURSDAY, the day before Good Friday commemorating the washing of the disciples' feet by Jesus.

MAUPASSANT, GUY DE (mō-pä-song'), a French novelist; born in the Château Miromesnil, Seine-Inférieure, France, Aug. 5, 1850. He was for some time clerk at the navy department, Paris. He published over 20 volumes, among them the collections of short stories, "The Sisters of Rondoli" (1884); "Tales of Day and Night" (1885); "The Left Hand" (1889); the novels "Peter and John" (1888); "Strong as Death" (1889); "Our Heart" (1893); the books of travel "In the Sunshine" (1884); "On the Water" (1888). "A Wandering Life" (1890). Unsettled by the insanity and death of a brother, he himself died in an asylum in Paris, July 6, 1893.

MAUREPAS, JEAN FRÉDÉRIC, COUNT, Minister of State in the reigns of Louis XV, and Louis XVI. of France,

born at Versailles in 1701. In 1715 his father who was Minister of State resigned and transferred the office to his



GUY DE MAUPASSANT

son, then a boy of 14. During the minority of Maurepas the office was administered by the Marquis de Villière. Maurepas was Minister of Marine, 1735, and Secretary of State, 1738. In 1749 a satire against the Marquise de Pompadour drove him from the court in disgrace. He returned on the accession of Louis XVI. He supported the alliance with America and the declaration of war against England. Remained Minister of State until his death in 1781.

MAURETANIA, a west African territory belonging to France. The population consists mostly of Moors who are nomads. These live in groups, driving their flocks wherever they can find water. Salt is found in considerable quantities.

MAURICE, FREDERICK DENISON, an English philosopher; born in Normanston, England, Aug. 29, 1805. He was educated at Cambridge and Oxford; became Professor of Theology in King's College, London (1846); edited the "Educational Magazine" (1839-1841); was one of the founders of Queen's College, London (1848). He wrote: "Eustace Conway" (1834), a novel; "Ancient Philosophy" (1850); "Theological Essays" (1853); "Mediæval Philosophy" (1857); "Modern Philosophy" (1862); etc. He died in London, England, April 1, 1872.

MAURICE, PRINCE OF ORANGE AND COUNT OF NASSAU, son of William the Silent; born in Dillenburg, Prussia, Nov. 13, 1567. After his father's assassination in 1584, the provinces of Holland and Zealand, and afterward Utrecht and the others, elected him their stadtholder. A great portion of the Netherlands was still in the hands of the Spaniards; but, under the leadership of Maurice, the Dutch, aided by an English contingent under the Earl of Leicester and Sir Philip Sidney, rapidly wrested cities and fortresses from their enemies. In 1590 Breda, and in 1591 Zutphen, Deventer, Nimeguen, and other places fell into their hands, in 1593 Geertruidenberg, and in 1594 Groningen. In 1597 he defeated the Spaniards at Turnhout in Brabant, and in 1600 won a splendid victory at Nieuwpoort. Then for more than three years he baffled all the power of Spain by his defense of Ostend. Finally, in 1609, Spain was compelled to acknowledge the United Provinces as a free republic. But from this time keen dissension grew up between the Orange party, who favored the Gomarists, and the Remonstrants or Arminians, who found their chief supporters in aristocratic republicans, like Olden Barneveldt. The former emerged victors from the struggle, and Maurice at once (1621) renewed the war with Spain. He died in The Hague, April 23, 1625.

MAURICE, SIR FREDERICK B., English major-general; born in 1871. Entered the army in 1892; made a captain in 1899; brevetted major in 1900; major, 1911; lieut.-col., 1913; brev.-col., 1915; major-gen., 1916. Was appointed a general staff officer second grade in 1908. Served at Tirah in 1897-1898, and was awarded medal with two clasps. In the South African War was mentioned in dispatches and won the Queen's Medal. In the World War of 1914-1918 became director of military operations. Imperial General Staff 1915-1916, decorated Commander of the Legion of Honor, Croix de Guerre, etc. Author of "Russo-Turkish War" 1877-1878; "Sir Frederick Maurice: A Record"; "Forty Days in 1914"; "The Last Four Months"; contributed to Cambridge Modern History.

MAURICIUS, Emperor of Constantinople; born in Cappadocia, in A. D. 539.

His reign of 20 years was occupied almost constantly with wars—wars with the Persians, terminated by the defeat of Bahram, and the restoration of Chosroes in 591; and wars with the Avars, which lasted from 592-599. In 599 Comentiolis was defeated, and an immense number of his troops captured by the Avars, who, on the refusal of Mauricius to ransom them, put them all to death. In 602 a mutiny broke out in the army on the Danube, Phocas was proclaimed emperor, and Mauricius, with his five sons, was murdered at Chalcedon.

MAURITANIA (-tā'ni-ä), in ancient history, a country or kingdom of northern Africa, embracing nearly all the points now known as Fez, with parts of Algeria and Morocco; bounded on the N. by the Mediterranean; S. by Getulia or Libya; E. by Numidia; and W. by the Atlantic Ocean.

MAURITIUS (mâ-rish'ius), or **ISLE OF FRANCE**, an island in the Indian Ocean, a colony of Great Britain, 500 miles E. of Madagascar; of an oval form, about 40 miles long from N. E. to S. W., and 25 miles broad, and surrounded by coral reefs; area, 713 square miles; pop. about 380,000, two-thirds originally coolies imported to work the sugar estates. It is composed chiefly of rugged and irregular mountains, the highest, the Montagne de la Rivière Noire, 2,700 feet, and the isolated rock Peter Botte, 2,600 feet. Between the mountains, and along the coast, there are large and fertile plains and valleys, having a rich soil of black vegetable mould or stiff clay. The climate is pleasant during the cool season, but oppressively hot in summer, and the island is occasionally visited by severe epidemics. In its vegetation Mauritius resembles the Cape in the number of succulent plants, cactuses, spurges, and aloes. The principal objects of cultivation are sugar, rice, maize, cotton, coffee, manioc, and vegetables. The exports include sugar (much the largest), rum, vanilla, aloe fiber, cocoanut oil. The imports consist of rice, wheat, cattle, cotton goods, haberdashery, hardware, etc. The exports and imports are each valued at over $10,000,000 annually; the revenue is about $3,500,000. The government is vested in a lieutenant-governor and legislative council. The island has two railways crossing it, in all 87 miles. Mauritius was discovered in 1505 by the Portuguese. The Dutch took possession of it in 1598, and named it after Prince Maurice. After occupation by the French it was captured by Great Britain in 1810. Principal towns, Port Louis and Mahébourg. May, 1892, it was visited by a terrible hurricane, one-third of Port Louis being destroyed.

MAUROCORDATOS, or **MAVROCORDATOS** (mäv-rō-kor-dä'tos), a Fanariote family, distinguished for ability and political influence, and descended from Greek merchants of Chios and Constantinople. ALEXANDER MAUROCORDATOS (1637-1709) studied medicine in Italy, and rendered valuable service in the negotiations with Austria of the immediately following years, his labors finding their culmination in the treaty of Carlovitz (1699). For some time after that he was one of a triumvirate in whose hands all power in the Ottoman empire rested. ALEXANDER MAUROCORDATOS, born in Constantinople, Feb. 15, 1791, took an active part in the Greek struggle for liberty, and prepared the declaration of independence and the plan of a provisional government, being himself elected president of the executive body. Then he undertook in 1822 an expedition to Epirus, which ended in the unsuccessful battle of Peta; but he saved the Peloponnesus by his resolute defense of Missolonghi (1822-1834). He died in Ægina, Aug. 18, 1865.

MAURY, MATTHEW FONTAINE, an American scientist; born in Spottsylvania co., Va., June 14, 1806; joined the United States navy in 1825; met with an accident in 1839 which crippled him for life, and was then given charge of the Hydrographic Office in Washington. In 1844, when that office was united with the Naval Observatory, he became superintendent. In 1861 he resigned his post; entered the Confederate navy; established the naval submarine battery service at Richmond; and was engaged in Europe in perfecting a torpedo system till the end of the war. In 1865 he went to Mexico, was appointed a member of Maximilian's cabinet, and was sent to Europe on a special mission by the emperor. After Maximilian's fall he resumed his scientific and literary work. In 1871 he accepted the presidency of the University of Alabama. His scientific works include "Navigation"; "Physical Geography" (1855); etc. He died in Lexington, Va., Feb. 1, 1873.

MAUSOLEUM (-lē'um), a magnificent tomb, or stately sepulchral monument. The name is derived from Mausolus, King of Caria, to the memory of whom his queen, Artemisia, erected a splendid monument at Halicarnassus, 353 B. C.

MAUVE (mōv), aniline purple, or Perkin's purple, the sulphate of the base mauveine occurring in commerce in crystalline masses, as a paste, and in solu-

tion. It is soluble in water, and dyes silk and wood a beautiful purple color.

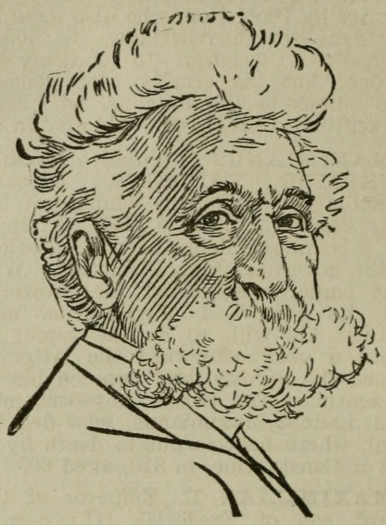
MAVROCORDATOS. See MAUROCORDATOS.

MAWSON, SIR DOUGLAS, British-Australian Antarctic explorer and geologist; born in Bradford, England, in 1882. While still young he went to Australia, where he was educated at the Universities of Sydney and Adelaide, receiving the degree of D. Sc. in 1909 from the latter institution. He was one of the members of the scientific staff of the Shackleton South Polar Expedition, and reached and determined the position of the south magnetic pole on Victoria Land. From 1911 to 1914 he commanded the Australasian Antarctic Expedition, making many discoveries of unknown land and gathering extensive and valuable scientific data. For his services in connection with this expedition, he was knighted in 1914. In the following year he made a successful lecture tour through the United States covering his Antarctic experiences. Besides many scientific papers, he has also published "The Home of the Blizzard."

MAXENTIUS (mak-sen'shius), **MARCUS AURELIUS VALERIUS,** a Roman emperor, the son of Maximianus Herculius. He declared himself emperor in 306. He was opposed to Galerius Maximianus, who was defeated, and slew himself. Maxentius then marched into Africa, where he became odious by his cruelties. Constantine afterward defeated him in Italy, and he was drowned in crossing the Tiber, in 312.

MAXIM, SIR HIRAM STEVENS, an American inventor; born in Sangerville, Me., Feb. 5, 1840; received a common school education; secured his scientific knowledge by reading and attending lectures; was employed in various iron works; and removed to England in 1881. He patented numerous inventions, including incandescent lamps, self-regulating current machines, the "Cordite" smokeless powder, etc.; devoted much attention to the problem of aërial navigation; but was best known as the inventor of the Maxim gun. He was manager of the firm of Vickers, Sons & Maxim, and a member of numerous American and European scientific and engineering societies. Early in 1901 he was knighted by Queen Victoria. He became a citizen of Great Britain, alleging unfair treatment of his inventions in the United States. His autobiography was published in 1915. He died in 1916.

MAXIM, HUDSON, inventor and engineer. Born at Orneville, Me., in 1853, was educated at the Maine Wesleyan Seminary, later entering the printing and subscription business at Pittsfield, Mass. He took up the business of ordnance and explosives in 1888 and was the first to manufacture smokeless powder in the United States, submitting



HUDSON MAXIM

samples to the government. Built dynamite factory and smokeless powder mill and sold his inventions to the E. I. du Pont de Nemours Co., becoming consulting engineer to the company. His other inventions include motorite, for driving torpedoes, stabilite, a smokeless powder and torpedo ram. He is author of "The Science of Poetry and Philosophy of Language" (1910), and other works.

MAXIM GUN. See MACHINE GUN.

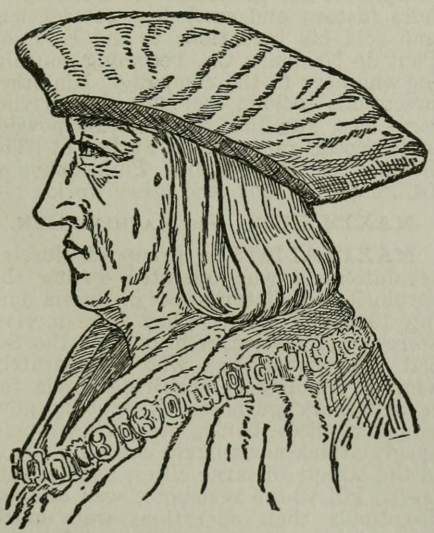
MAXIMALISTS, a group of Russian revolutionists who operated during the revolutionary disturbances in Russia during 1905 and later. They were a very secret organization, a branch of the Social Revolutionists, who deliberately adopted a policy of acquiring funds for revolutionary purposes by robbing government offices, banks, etc. They would openly attack messengers carrying funds in the streets of large cities, not hesitating to kill where resistance was offered. Eventually their operations were much hampered by the precautions taken by the government officials. This group was closely allied with the "fighting arm" of the Social Revolutionary Organization, whose members adopted terrorist measures. The word "Maximalist" has sometimes been applied to the Bolsheviki, but this is through an error of

translation, the Bolsheviki being Social Democrats, and having nothing in common with the Social Revolutionists.

MAXIMIANUS, GALERIUS VALERIUS, emperor of Constantinople, was originally a shepherd in Dacia, afterward a soldier, and was raised to the imperial dignity by Diocletian, who also gave him his daughter in marriage. In 305 he compelled Diocletian to abdicate the throne; but his cruelty soon rendered him odious to the Romans, who raised Maxentius to the throne. He died in 311.

MAXIMIANUS (-ā'nus), **MARCUS AURELIUS VALERIUS**, surnamed HERCULIUS, a Roman emperor; born near Sirmium, in A. D. 250. From being a common soldier, he was associated in the government by Diocletian. When that emperor abdicated the crown, in 304, he compelled Maximianus, much against his will, to do the same; but about a year afterward the latter resumed the dignity, and opposed his son Maxentius. The troops, however, mutinied against Maximianus, who fled into Gaul, where he was put to death by order of Constantine, in 310, aged 60.

MAXIMILIAN I., Emperor of Germany, son of Frederick III.; born in Neustadt, March 22, 1459. At the age of 18 he married Mary, heiress of Charles



MAXIMILIAN I.

the Bold, Duke of Burgundy, and was involved in a war with France. In 1486 Maximilian was elected King of the Romans, and in 1493 he succeeded his father in the empire. He was the first who took the title of emperor without being crowned at Rome. By the marriage of his son Philip to Joanna, daughter of Ferdinand and Isabella, Spain was brought into the power of the House of Hapsburg. He invaded Burgundy, but was abandoned by the Swiss, who formed part of his army; he then made war on the Swiss, but was several times defeated, and had to make peace with them. In 1508 he set out for Rome, was refused a passage through the Venetian territories, and, attempting to force his way, was defeated. The same year he joined in the famous league of Cambray against the Venetians; from which he withdrew in 1513, and formed another league against France. In 1518 he assembled the Diet at Augsburg, at which Luther appeared on citation, and appealed to the Pope. He died in Wels, Upper Austria, Jan. 12, 1519.

MAXIMILIAN II., Emperor of Germany; born in Vienna, July 31, 1527, was the son of the Emperor Ferdinand I. He was elected King of the Romans in 1562, and was soon after advanced to the thrones of Hungary and Bohemia; and on the death of his father, in 1564, was crowned emperor. The 12 years this monarch reigned were chiefly devoted to the internal welfare of the country and happiness of his people. He died Oct. 12, 1576.

MAXIMILIAN (FERDINAND MAXIMILIAN JOSEPH), Archduke of Austria and Emperor of Mexico; born in Vienna, Austria, July 6, 1832. He was the son of the Archduke Francis Charles, and the younger brother of Francis Joseph I. In 1862 the French were induced to interfere in the affairs of Mexico, and in 1863 called together an Assembly of Notables, which offered the crown of Mexico to Maximilian. After deliberation he solemnly accepted it; and in June, 1864, he entered Mexico. For a time all went well; but he vainly tried to reconcile the Mexican parties. Juarez again raised the standard of independence; and soon after (1866) Louis Napoleon had to contemplate the withdrawal of his troops. The French were most anxious that Maximilian should leave with their troops; but he felt bound as a man of honor to remain and share the fate of his followers. At the head of 8,000 men he made a brave defense of Queretaro against a Liberal army under Escobedo. In May, 1867, he was betrayed and tried by court-martial, and on July 19 he was shot. After the death of Maximilian his writings were published under the title of "From My Life; Sketches of Travel, Aphorisms, Marine Pictures" (7 vols. 1867). See MEXICO.

MAXIMILIAN, JOSEPH, King of Bavaria; born in Schwetzingen, Baden, May 27, 1756. He succeeded his uncle, Charles Theodore, in 1799. Attaching himself to the fortunes of Napoleon, he gave his daughter in marriage to Eugène Beauharnais in 1806. In the same year his duchy was erected into a kingdom. In 1813, however, he formed a member of the league against the emperor, and by that proceeding retained his throne after the fall of Napoleon. He died in Nymphenburg, near Munich, Oct. 13, 1825.

MAXIMILIAN Prince and formerly heir presumptive of Baden, a German statesman, born July 10, 1867. He was president of the Upper Chamber of Baden in 1917 and in an address made at that time he indicated that his views on the war were moderate. This led to the belief that he would be acceptable as a spokesman for Germany in dealing with the Allied nations. On Oct. 2, 1918, he was made Chancellor of the Empire. His position was weakened by the publication of a private letter in which he ridiculed the sincerity of his previous profession. Maximilian on assuming office at once began negotiations for peace. On Oct. 4, 1918, he appealed to President Wilson for immediate institution of peace negotiations. This was followed by an exchange of notes between the German Government and President Wilson. On the day following the sending of the first notes, Maximilian addressed the Reichstag and indicated a disposition in which he declared his argeement with the program of the majority parties in the Reichstag for a conclusion of peace on moderate terms. Constitutional reforms were at once instituted under Maximilian's direction. Before these could be carried into effect, however, there was an internal collapse of the government. On Oct. 27, 1918, General von Ludendorff resigned. This was followed by a revolt of the German fleet and the seizure of Kiel by the Soldiers' Council. On Nov. 8, 1918, Maximilian resigned, but his resignation was not accepted. On November 9 he published a decree declaring that he would remain in office until the setting up of the regency had been settled. He was succeeded on the following day as Chancellor by Friedrich Ebert.

MAXIMINUS (-mĭ'nus), **CAIUS JULIUS VERUS**, a Roman emperor. He was of barbarian origin, and was at first a shepherd in Thrace. His capacity for fighting procured him rapid advancement, and under Alexander Severus he had the command of a legion with which he served on the Rhine. In A. D. 235 he took part in a conspiracy against Alexander, and on his murder by the soldiers was proclaimed emperor. The Gordiani having been proclaimed in Africa, Maximinus hastened to Italy and laid siege to Aquileia, which made heroic resistance to the hated tyrant. He was there murdered by his soldiers, together with his son in 238.

MAXIMUS, MAGNUS, a Roman emperor, and a Spaniard. He was general of the Roman army in Britain, where he proclaimed himself emperor in 383. Gratian marched against him, but was defeated and assassinated. Maximus, having made himself master of Gaul, Britain, and Spain, fixed the seat of his empire at Treves. He next marched into Italy, where he committed dreadful cruelties, but was at last besieged in Aquileia by the Emperor Theodosius. His soldiers delivered him up to Theodosius, who then caused him to be beheaded, in 388.

MAXIMUS, PETRONIUS, a noble Roman, who became emperor in 455. In less than three months afterward he was slain in the streets for attempting to fly on the appearance of the fleet of Genseric, King of the Vandals.

MAX MÜLLER. See MÜLLER, F. M.

MAXWELL, GENERAL SIR JOHN GRENFELL, born in 1859. Educated at Cheltenham College. Joined the 42d Highlanders in 1879. A Lieutenant of the Royal Highlanders in 1881. Captain in 1887. Served in the Egyptian War of 1882 with the 1st Battalion of the Black Watch. Was present at the battle of Tel-el-Kebir. Gained a medal and the Star of the Khedive for services. Served in the Nile Expedition of 1884 as Staff Captain. With the Egyptian Field Force in 1885 as aid-de-camp to Major-General Grenfell and was present at the Giniss engagement, gaining the D. S. O. Participated in the fight at Gemaizah in 1888, was brevetted Major. At Dongola in 1896 was mentioned in dispatches and made Lieutenant-Colonel. Commanded the Egyptian Brigade Battalion at Omdurman. Commanded the 14th Brigade in the South African War, 1900-1901. Military Governor of Pretoria, 1900-1901 (mentioned in dispatches and decorated with King's and Queen's Medals, K. C. B.) Chief of Staff of 3d Army Corps, 1902-1904. Served in the World War in 1914-1915. Commander-in-Chief in Ireland in 1916. Commander-in-Chief of the Northern Command, 1916-1919.

MAY, the 5th month of the year, having 31 days. It was 2d in the old Alban calendar, 3d in that of Romulus, and 5th in that of Numa Pompilius. In the Alban calendar it only had 26 days, in the calendar of Romulus 31 days, and in that of Numa 30 days. The odd day of which Numa deprived it was restored by Julius Cæsar. The etymology of the word is doubtful.

MAY, ISLE OF, a Fife islet in the Firth of Forth, 5¼ miles S. S. E. of Crail, rising 150 feet; area, 140 acres; has a lighthouse, whose electric light is visible 22 nautical miles. It was the seat of a priory.

MAY, SIR THOMAS ERSKINE, BARON FARNBOROUGH, an English historian; born in London, England, Feb. 8, 1815. He was educated at Bedford School, became assistant librarian of the House of Commons in 1831. He was called to the bar in 1838, and shortly after his retirement from office in 1886 was raised to the peerage as Baron Farnborough. His most important works are "A Treatise on the Law, Privileges, Proceedings, and Usage of Parliament" (1844); "Constitutional History of England since the Accession of George III., 1760-1860" (1861-1863; 3d ed., with supplementary chapter, 3 vols. 1871); "Democracy in Europe: a History" (2 vols. 1877). He died in Westminster Palace, May 18, 1886.

MAYA (mä'yä) **INDIANS**, a race of aborigines of Yucatan, supposed to be the builders of Uxmal, Palenque, Chichen Itza, etc. Their history is important as throwing light on the civilization of the Central and South American races. The Mayas were the most advanced of the North American aboriginal races, but today they are sadly degraded on account of contact with the Spaniards. Old Spanish records, a very few Maya books with old picture-writing, several MSS. written by Mayas in Maya, but with Spanish letters, very soon after the Conquest, and ruined towns and cities, grave-mounds, and relics attest their former condition. The Mayas and Aztecs were a good deal alike. Their religions were related; both adored many of the same deities—especially, perhaps, the sun. Both worshiped idols carved from stone, and both sometimes sacrificed human victims. In methods of warfare the two people were much alike, but the Mayas, though brave, were not so warlike as the Aztecs and paid more attention to agriculture and the arts. The people lived well. They dressed in cotton of their own raising and weaving. They made many ornaments of gold and green stone, and were expert featherworkers. They paid a great deal of attention to bees and gathered much honey, raised poultry, and though not roving hunters, like some tribes, they were skilled in trapping and snaring game. They surpass all American tribes in their architecture and in their carving in stone. Though without iron tools, these people were able to erect fine buildings of stone, carved with remarkable and beautiful designs. In the wild forests of Yucatan and Central America, in the midst of dense tropical woods, overgrown with trees and tangled vines, are the deserted ruins of upward of 40 ancient towns. These different towns were connected by paved roads of stone, over which couriers ran, carrying letters, along which traders bartered and dickered, and on which the forces of one town would often march out to capture and sack some other town. The buildings are very long, flat-topped, one story high, and contain many rooms. These buildings were sometimes constructed around the sides of a square court, the doors all opening into the court. There are also temples for purposes of worship. In such there is usually found a tablet in the wall and an altar for sacrifice. The interior decoration of rooms was often elaborate, the walls being covered with stucco, on which were painted in brilliant colors paintings which furnish us much information of the dress, manners, gods, and worship of the people. Often these designs are in low relief. One of the most famous Mayan works of art is in the temple at Palenque, where is a remarkable tablet on which is represented a sacrificial scene.

MAYAGUEZ, the third largest city in Porto Rico, situated on the western coast of the island. The shallow roadstead of the harbor prevents its general use by any but small steamers. While the industries are small and unimportant a considerable amount of coffee is shipped to the United States from this port. Pop. (1920) 19,069.

MAY APPLE, the fruit of *Podophyllum peltatum*, a ranunculaceous plant growing in the East. It is a low herbaceous plant, having the white flowers hidden by the overshadowing broad leaves. Also *Passiflora incarnata*, which has sweet-scented flowers variegated with purple. The fruit is of the size of an apple, but orange-colored, with a sweetish, yellow pulp.

MAYENNE, a river in N. W. France; after a course of 127 miles in a S. direction, joining the Sarthe at Angers, to

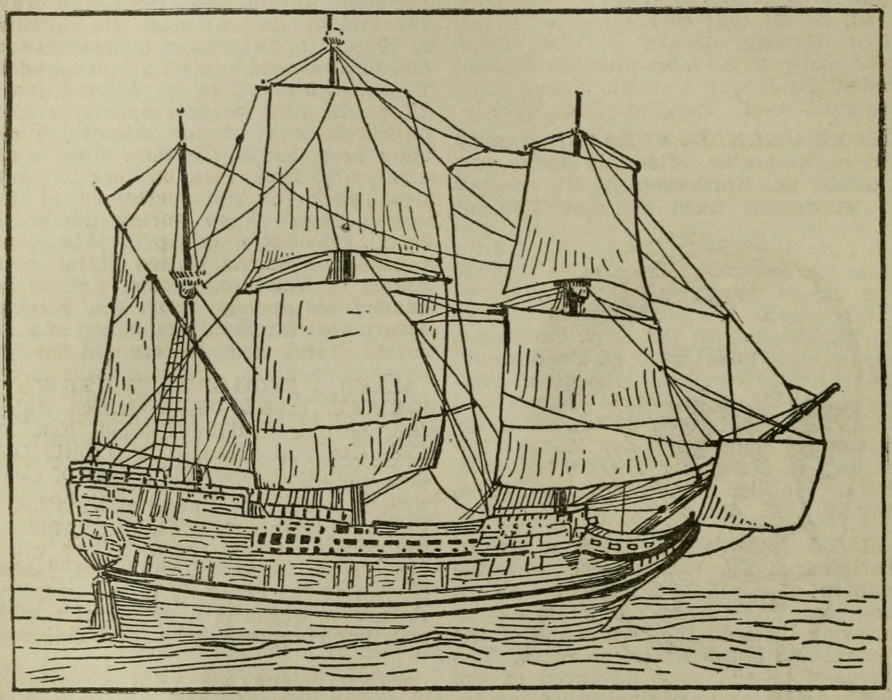
form the Maine, a tributary of the Loire. It is navigable up to Laval.

MAYENNE (mä-yen'), a French department formed out of the old provinces of Maine and Anjou, now containing the arrondissements of Laval, Château-Gontier, and Mayenne; area, 1,986 square miles; pop. about 300,000. The valleys of the Mayenne, Vilaine, and Sarthe are fairly fertile, and yield wheat, barley, flax, potatoes, hemp, and fruit (especially apples for cider). Cattle breeding, coal and slate mining, and cotton spinning and weaving are the other chief industries. Chief town, Laval. The town of Mayenne, on the Mayenne river, 78 miles S. by W. of Caen, has a picturesque ruined castle (taken by the English in 1424), steep narrow streets, and manufactures of calico and linen.

MAYER, ALFRED MARSHALL, an American physicist; born in Baltimore, Md., Nov. 13, 1836. From 1871 till his death he was Professor of Physics in Stevens Institute of Technology, Hoboken, N. J. Besides his editorial work on the "American Journal of Science," and numerous contributions to other journals, he published "The Earth a Great Magnet" (1872); "Light" (1877); "Sound" (1878); "Sport with Gun and Rod in American Woods and Waters" (1883); "Researches on the Röntgen Rays" (1896), etc. He died in Maplewood, N. J., July 13, 1897.

MAYFAIR, a fashionable neighborhood at the "West End" of London, adjoining Belgravia.

MAYFIELD, a county-seat of Graves co., Ky., 25 miles S. of Paducah, on the Illinois Central railroad. Has large clothing and tobacco factories. Incorporated 1826, has mayor and council of one chamber. Pop. (1910) 5,916; (1920) 6,583.



THE MAYFLOWER

MAYFLOWER, the vessel in which the Pilgrim Fathers sailed to this country.

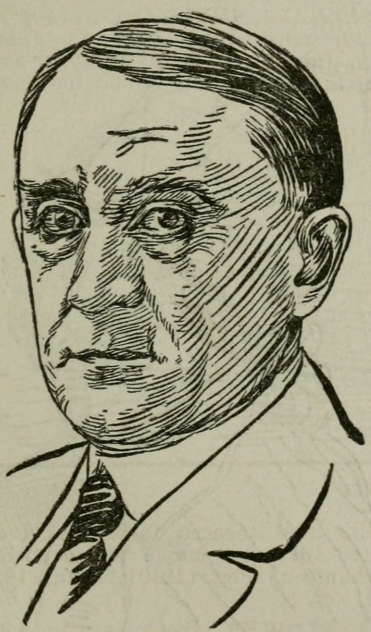
MAYNARD, town of Middlesex co., Mass., on the Assabet river, Boston and Maine railroad, 10 miles S. E. of Marlboro, and 28 miles N. W. of Boston. Has large woolen and powder mills, and abundant water power, which is controlled by the city. Pop. (1910) 6,390; (1920) 7,086.

MAYNARD, BELVIN W., LIEUT., American aeronaut. Formerly pastor of Baptist church in Clinton, N. C. En-

tered air service when United States declared war. One of the winners in the New York to Toronto and return aerial race in 1919. Winner in transcontinental flight, October 1919, making the flight from Mineola, L. I., to San Francisco in 25 hours. In 1920 became special secretary of Y. M. C. A., Brooklyn, at the same time giving much attention to flying.

MAYNOOTH, a village of Kildare, Ireland, W. of Dublin. Near by are the ruins of Geraldine Castle. It is chiefly known as the seat of Maynooth College of St. Patrick, opened in 1795, from which many of the most prominent members of the Roman Catholic clergy have been graduated. Pop. less than 1,000.

MAYO, CHARLES HORACE, surgeon; born at Rochester, Minn., in 1865, was educated at Northwestern University, and graduated from Chicago Medical



DR. CHARLES H. MAYO

College in 1888. From that year he practiced in Rochester, and became surgeon to Mayo Clinic of St. Mary's Hospital. With his brother donated $1,500,000 in 1915 to establish the Mayo Foundation for medical research at Rochester. President of Western Surgical and Gynæcological Society (1904), of Minnesota State Medical Society (1905), and chairman surgical sections American Medical Association (1907) and International Tuberculosis Congress (1908). Has won reputation in treating goiter, and in collaboration with his brother, William James, has published "A Collection of Papers Published Previous to 1909" (2 vols. 1912).

MAYO, HENRY THOMAS, an American naval officer, born in Burlington, Vt., on Dec. 8, 1856. He graduated from the United States Naval Academy in 1876. After serving on various vessels of the United States Navy, commanding at the Mare Island Navy Yard, and holding some appointments with the Navy Department, he was made rear-admiral in 1913. In 1915 he was promoted to vice-admiral and placed in command of the battleship squadrons of the Atlantic Fleet. In 1917 he was appointed commander-in-chief of the Atlantic Fleet, being promoted at the same time to admiral, and from then on took a prominent part in the operations of the United States Navy during the World War. Previously, in April, 1914, while in command of the United States naval vessels at Tampico, Mexico, he had demanded an apology from the Mexican Government for the illegal arrest of some United States naval officers and men.

MAYO, RICHARD SOUTHWELL BOURKE, EARL OF, a British statesman; born in Dublin, Ireland, Feb. 21, 1822. He was educated at Trinity College, Dublin; entered the House of Commons as a Conservative in 1847, and was appointed chief secretary of Ireland by Lord Derby in 1852, 1858, and 1866. In 1869 he succeeded Lord Lawrence as Viceroy of India. While inspecting the convict settlement at Port Glair on the Andaman Islands, Feb. 8, 1872, he was fatally stabbed by a Punjab fanatic.

MAYO, WILLIAM JAMES, surgeon; born at Le Sueur, Minn., in 1861, received his preparatory education at Niles Academy, and graduated as M. D. from University of Michigan in 1883. He engaged in the practice at Rochester and became surgeon at St. Mary's Hospital from 1889. Later regent of the University of Minnesota and president of the Minnesota State Medical Society. The clinic established by himself and brother Charles has gained world-wide celebrity, and thousands of operations take place there annually, particularly for cancer, goiter, gallstones, and intestinal diseases. The papers issued from the clinic are read eagerly in the medical world.

MAYO FOUNDATION FOR MEDICAL EDUCATION AND RESEARCH, established in February, 1915, by the two famous surgeons, Dr. William J. and Charles H. Mayo of Rochester, Minn. In the course of the preceding quarter of a

century these two surgeons had gained an international reputation, established probably the most modern equipped of all hospitals, and a private laboratory unexcelled in America. The hospital and laboratories, valued at considerably over a million dollars, were given to the University of Minnesota, and the entire research school placed under the control of the regents of the State. The opportunities thus afforded for research are greatly increased and to-day it is doubtful if anywhere in the world there is done better medical research work.

MAYONNAISE (mā-yo-nāz'), a thick cold sauce for salads, cold meat, poultry, fish, vegetables, etc., made of the yolks of eggs, salad oil and vinegar, with a little salt, cayenne pepper, and meat jelly; it is sometimes colored red with powdered lobster coral, or green with spinach or parsley.

MAYOR, the chief magistrate of a city or corporate town.

MAYOTTE (mä-yot'), or **MAYOTTA** (mä-yot'tä), an island in the Indian Ocean, one of the Comoros, at the N. E. entrance of the Mozambique Channel, and a French colony; length, about 30 miles; breadth, 20 miles; area, 140 square miles; pop. about 15,000. Some of its volcanic peaks are nearly 2,000 feet high.

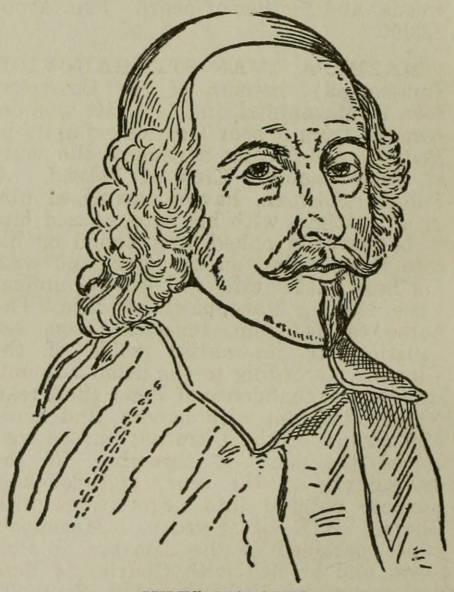
MAYSVILLE, a city and county-seat of Mason co., Ky., on the Ohio river and on the Louisville and Nashville and the Chesapeake and Ohio railroads; 63 miles S. E. of Cincinnati. There are the Hayswood Female Seminary, St. Francis de Sales Academy, a high school, the Maysville and Mason County Library, Odd Fellows' Library, electric light and street railroad plants, and National and State banks. It has cotton, flour, saw, and planing mills, shoe, furniture, ice, and cigar factories, plow works, daily and weekly papers. Pop. (1910) 6,141; (1920) 6,107.

MAYWEED, a European plant (*Anthemis Cotula*), order Compositæ. It is a troublesome weed in corn, and difficult to eradicate. It has daisy-like flowers, finely divided leaves, and an unpleasant smell, and sometimes blisters the hands of reapers.

MAYWOOD, a town in Cook co., Ill., on the Des Plaines river, 11 miles W. of Chicago, on the Chicago Great Western and other railroads. Seat of the German Lutheran Theological Seminary, and homes for old people and crippled children. Has large steel and tin plate works, and city-owned waterworks. Pop. (1910) 8,033; (1920) 12,072.

MAZANDERAN (ma-zen-de-rân'), a province of N. Persia, bordering the Caspian Sea for about 200 miles, and lying between the provinces of Ghilan and Astrabad; consists of a belt of low marshy coast land, 10 to 20 miles wide, backed by the well-wooded slopes of the Elburz. The climate is very changeable, in summer both rainy and unhealthy, but on the uplands fairly salubrious. Owing to the fertility of the soil, which is watered by numerous small rivers, the Persians call the province the "Garden of Iran." Rice, wheat, and other cereals, cotton, mulberry trees, and a variety of fruits are produced; horses, asses, and camels are extensively bred; and iron ores and mineral oils very abundant; area of province, 10,400 square miles; pop. about 200,000. Chief town Sari, though Barfurush is the seat of trade with Russia.

MAZARIN, JULES (mä-zä-ra*ng*'), an Italian ecclesiastic; born in Pescina, Italy, July 14, 1602. He studied at Alcala, in Spain, after which he went to



JULES MAZARIN

Rome, and became attached to the service of Cardinal Sachetti, whom he accompanied on a mission into Lombardy. Mazarin rendered important assistance in the negotiations which effected a peace between the French and Spaniards. This procured him the esteem of Cardinals Richelieu and Barberini, by the latter of whom he was recommended to the Pope, who sent him, in 1634, as nuncio-extraordinary to the court of France.

Recalled two years later, he entered the service of the French king in 1639, and was sent ambassador to Turin. In 1641 he was made a cardinal, and on the death of Richelieu, at the end of the following year, succeeded him as prime minister. Under Mazarin the influence of France among the nations was increased, and in the internal government of the country those principles of despotism were established on which Louis XIV. afterward acted. It is admitted that as a financial administrator he was far inferior to Richelieu. Mazarin was said to have privately married Anne of Austria. He died in Vincennes, France, March 9, 1661.

MAZATLAN (mä-sät-län'), a seaport in the State of Sinaloa, Mexico, at the entrance of the Mazatlan river, which falls into the Gulf of California, 230 miles S. E. of Sinaloa; is a well-built, picturesque town, the houses nearly all of one story, and possesses a cathedral, custom house, barracks, cotton factory, foundries, etc.; chief exports, silver, dyewoods, and mother-of-pearl. Pop. about 22,000.

MAZEPPA, IVAN STEPHANOVICH (mä-zep'pä), hetman of the Cossacks; born in Mazepintzi, in 1644. He was descended from a poor but noble family of Podolia, and became a page at the court of John Casimir, King of Poland. A Polish nobleman, having surprised him in an intrigue with his wife, caused him to be stripped naked, and bound on his own horse, lying on his back, and with his head to its tail, and let the animal loose, leaving Mazeppa to his fate. The horse carried him, senseless from exhaustion, to its native wilds of the Ukraine, according to the usual account. He won the confidence of Peter the Great, who loaded him with honors, and made him Prince of the Ukraine; but he conceived the idea of throwing off the sovereignty of the czar, and for this purpose entered into negotiations with Charles XII. of Sweden. Mazeppa's hopes perished in the disaster of Pultowa, and he fled with Charles to Bender, where he died miserably, Sept. 22, 1709.

MAZURIAN LAKES, BATTLE OF, one of the first encounters of magnitude between the German and Russian forces after the outbreak of hostilities in 1914. The lakes, numerous small sheets of water in a vast marsh, south of Königsberg, East Prussia, constituted very difficult ground for an invading army. It was his personal knowledge of this terrain that caused General von Hindenburg to be recalled from the retired list, to command the German forces which were sent to retrieve the initial defeat of the German forces, after they had been driven back by the Russians, under General Rennenkampf, on Aug. 20, 1914. Arriving in the field a few days later, Von Hindenburg, with a much inferior force, attacked the Russian forces under Samsonoff, numbering nearly 250,000, near Tannenberg, and through his intimate knowledge of the swamps, maneuvered the enemy into such a position that he was hopelessly defeated. Thousands of the Russians were engulfed in the mire, their escape cut off by the strategy of the German commander, Samsonoff himself being among the slain. One hundred thousand were taken prisoners. Practically this whole Russian army was annihilated, so that Von Hindenburg was able to turn his attention to the main Russian forces and force their retirement beyond the frontier.

MAZURKA, or **MAZOURKA** (-zör'kä), a Polish dance of lively grotesque character, with a peculiar rhythm.

MAZZINI, GIUSEPPE (mät-sē'nē), an Italian patriot; born in Genoa, June 28, 1805; was graduated at the University of Genoa (1826); admitted to the bar there. After six months' imprisonment on the charge of conspiring against the government, he left Italy and resided in succession in Marseilles, Paris, and London, whence he agitated for the liberation of Italy. At the outbreak of the revolution of 1848 he returned to Italy, where he became a member of the triumvirate in the republic of Rome, but was again exiled at the restoration of the papal power (1849). He afterward organized risings in Mantua (1852), Milan (1853), and Genoa (1857), though in the unification of Italy (except Venice and the "Patrimony of Peter") under Victor Emmanuel (1861) his part was subordinate. In 1870 he engaged in an insurrection at Palermo and was captured, but afterward released at the general amnesty after the occupation of Rome. He wrote much in English and French. His "Memoirs" were printed in 1875; "Complete Works" (18 vols. 1861-1891). He died in Pisa, Italy, March 10, 1872.

MEAD, a fermented liquor made from honey. The Latin name is *Hydromel.*

MEADE, GEORGE GORDON, an American military officer; born in Cadiz, Spain, where his father was United States naval agent, Dec. 31, 1815; was graduated at the United States Military

Academy in 1835; served for a time against the Seminole Indians and in the Mexican War. In 1861 he obtained a brigade of volunteers, and during the Peninsular campaign received a severe gunshot wound. He distinguished himself at Antietam and at Fredericksburg, and was promoted Major-General in November, 1862. In June, 1863, he was placed in command of the Army of the Potomac, superseding Gen. JOSEPH HOOKER (*q. v.*) on the night of the 27th. A week later the battles of Gettysburg had been fought under his command, and Lee's effort to carry the war into the country N. of the Potomac had been defeated. Meade became Brigadier-General in the regular army on July 3, and Major-General in 1864. After the war he commanded various military departments till his death, in Philadelphia, Nov. 6, 1872.

MEADOW, a level tract of land under grass, and generally mown for hay; grass-land; low-lying, level land on the banks of a river or lake, but sufficiently dry to produce herbage of a superior quality.

MEADOW GRASS, the common name of several common grasses of the genus *Poa*. The *P. pratensis*, or smooth meadow grass, is one of the most common of agricultural grasses.

MEADOW HEN, a name commonly given to the American coot.

MEADOW LARK, a beautiful American species of lark, *Orlanda Magna*, found in eastern United States to the high central plains. It is about 11 inches long, and the tail 5 inches. The body is thick and stout, the legs large; the bill is nearly straight, and three times as long as high; inner lateral toe longer than the outer; feathers of head stiffened, the shafts above extended into a black bristle. The upper parts are brown, marked with brownish-white, and the exposed portions of the wings and tail with transverse dark-brown bars; the under parts yellow, with a black pectoral crescent.

MEADOWSWEET, a well-known handsome British plant, *Spiræ Ulmaria*, natural order *Rosaceæ*. It grows by the sides of streams and in damp places, has pinnate leaves, and stems two feet high bearing corymbs of white fragrant flowers.

MEADVILLE, a city and county-seat of Crawford co., Pa.; on the Venango river, and the Erie, the Bessemer and Lake Erie, and the Northwestern Pennsylvania railroads; 120 miles N. of Pittsburgh. It contains Allegheny College, the Meadville Theological Seminary, City and Spencer Hospitals, public library, parks, street railroad and electric light plants, waterworks, National banks, and several daily and weekly newspapers. It is in the heart of an agricultural region, and is a market and shipping point for the oil regions. The city has the Erie railroad shops, iron works, furniture factory, a vise and tool factory, flour mills, tanneries, machine shops, etc. It has the commission form of government. Pop. (1910) 12,780; (1920) 14,568.

MEAGHER, THOMAS FRANCIS (mä'Hur), an Irish-American patriot; born in Waterford, Ireland, Aug. 3, 1823. He was the son of a wealthy merchant, and educated at the Jesuit College of Clongowes Wood, Kildare, and at Stonyhurst. He early devoted himself to the patriotic cause as a prominent and fearless member of the Young Ireland party. In 1848 he was sentenced to death under the "Treason-felony" Act, but was sent for life to Van Diemen's Land instead. He made his escape in 1852, studied law in the United States, but on the outbreak of the Civil War volunteered as a Union soldier. In 1861 he organized the "Irish brigade" and distinguished himself by his courage in the seven days' battles around Richmond, at the second battle of Bull Run, Fredericksburg, and Antietam. He was drowned, July 1, 1867.

MEALY BUG, an insect very injurious to pineapples and other exotics. It is reddish, and covered with a white powdery substance.

MEASLES, an infectious disease, called also rubeola, most frequently attacking children, though sometimes occurring in old age, as in the case of George III. and of Otho, ex-King of Greece, who died of this affection. The period of incubation is about eight days, when the rash appears, accompanied by catarrh, watery eyes, acrid watery discharge from the nose, sneezing, and often pain in the forehead, with, occasionally, bleeding at the nose. The bronchi are frequently affected, this forming the chief danger. The spots are small red, papular, and crescent-shaped, commencing on the face and passing downward, disappearing in the same order. The old-fashioned remedy is saffron-tea, but the chief necessity is to ward off any respiratory mischief, or to combat it when present. A form of measles known as rötheln, or German measles, is distinct from measles, or from scarlatina, with which it has often been confounded. The eruption

lasts longer, never less than four or five days, sometimes 8 or 10, and differs slightly from that of measles or scarlatina. It is usually a very mild disease, requiring only an aperient saline, with liquid food, and keeping in bed for a few days.

MEASURE, a standard of measurement; a definite unit of capacity or extent, fixed by law or custom, in terms of which the relative sizes and capacities of things are ascertained and expressed; as, a foot, a yard, a mile are measures of length; a pint, a gallon, measures of capacity; a square foot, a measure of area; a cubic foot, a measure of volume, etc. See WEIGHTS AND MEASURES.

In Music.—The quantity of notes which are placed in the bar, and which is generally called the time, of which there are but two kinds, viz., common time, containing an equal quantity of notes in the bar, and triple time, containing an unequal quantity.

Lineal Measure.—The measure of lines or distances; the standard unit of lineal measure in the United States and in England is the yard.

Unit of Measure.—A given quantity, used as a standard of comparison in measuring a quantity of the same kind. Every kind of quantity has its own unit of measure, and under different circumstances the same kind of quantity may have different units of measure.

Measure of Angles.—The right angle being taken as the angular unit, its subdivisions are degrees, minutes and seconds. The right angle contains 90 degrees, the degree 60 minutes, and the minute 60 seconds. All smaller fractions are expressed decimally in terms of the second. The French have proposed to divide the right angle into 100 equal parts, called grades, but the suggestion has not been extensively adopted.

MEAT. See PACKING INDUSTRY.

MEAT INSPECTION. See PACKING INDUSTRY.

MEAUX, a town of the department of Seine-et-Marne, France, on the right bank of the river Marne, about 30 miles E. of Paris. It has a large trade in Brie cheese and other agricultural products; important meal and corn mills; manufactures of cotton, lumber, machinery, sugar, and steel. In September, 1914, it became famous as the turning point of the German drive on Paris. It was here that the German advance was stopped and that the German retreat to the Aisne began. Pop. about 14,000.

MECCA, a city of Arabia, in the province of El-Hedjaz, 51 miles E. of Djedda, on the Red Sea, and 270 miles S. E. of Medina. Mecca, meaning literally "the place of assembly," is situated in a long, narrow, sandy valley, running N. and S., called in the Koran "the valley without seeds." It is 2 miles long, and about 1,500 feet wide. The houses, which are handsome, follow the windings of the valley, being built partly on the declivities on both sides. The streets are wide and regular. The only public building of consequence is the Beitullah, or El-Haram, the famous mosque of Mecca, in the interior of which is the Caaba, or Holy House. The mosque is about 350 feet long and 300 feet in breadth, and is formed by colonnades, roofed with numerous small cupolas supported by 450 pillars, about 20 feet in height, of marble or Mecca stone. The walls, arches, and minarets are gaudily painted in stripes of red, yellow, and blue. The Caaba is an oblong massive structure, about 45 feet in length and 35 feet in breadth, and from 35 to 40 feet in height, its doors being coated with silver, embellished with gold ornaments. At the N. E. corner is the celebrated "black stone," said to have been brought by the angel Gabriel to form the foundation. The Holy Well of Zem-zem, said to have been found by Hagar when her son Ishmael was dying with thirst, supplies the city with water for drinking and ablution, its use for other purposes being forbidden. There are no manufactures of any consequence, but there is a large trade during the month of Dhabhadja (the latter end of June and the beginning of July), owing to the pilgrims from the different countries exposing articles for sale, as well for gain as to defray the expenses incurred by the journey. The climate is sultry and unwholesome. Mecca is celebrated as the birthplace of Mohammed, in 570, who was expelled in 622, and captured it in 630. In 692 it was captured by Abd-el-melik, and in 929 it was plundered by the Carmathians. In 1184, Renaud de Chatillon failed in an attempt on Mecca. In 1803 it was seized by the Moslem sect of the Wahabees, from whom it was taken in 1818 by Ibrahim Pasha. Pop. about 60,000.

MECHANIC'S LIEN, a charge or lien placed upon real estate to secure the payment for labor performed, or materials furnished for the construction of buildings thereon.

MECHANICAL ENGINEERS. See ENGINEERING.

MECHANICAL ENGINEERS, AMERICAN SOCIETY OF, organization of engineers, manufacturers and professors

of engineering, established in 1880 to promote the arts connected with mechanical construction, and having offices in New York. The membership has five divisions—honorary members, members practicing their profession for at least 10 years, associates connected with engineering science, associates not less than 27 years of age in active practice at least six years, and juniors of 21 years or over. It publishes numerous volumes on engineering topics and maintains central library of nearly 70,000 volumes in New York.

MECHANICS, that branch of practical science which considers the laws of equilibrium and the motion of solid bodies; the forces by which bodies, whether animate or inanimate, may be made to act on one another; and the means by which these forces may be increased so as to overcome those which are more powerful.

MECHANICSVILLE, a town in Saratoga co., N. Y., 19 miles N. of Albany, on Hudson river, and Boston and Maine railroad. Has manufactures of sashes, blinds, paper boxes, fiber, knitted goods, shirts, mattresses, and metal goods. The public buildings are handsome. Commission form of city government. Pop. (1910) 6,634; (1920) 8,166.

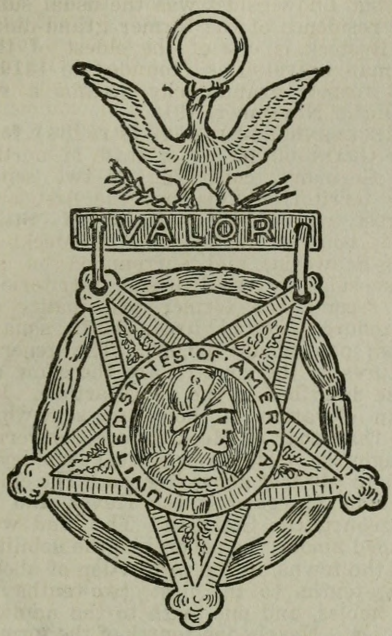
MECHLIN. See MALINES.

MECKLENBURG (mek'len-bör'G), a territory of northern Germany, bounded on the N. by the Baltic, on the E. and S. by the Prussian dominions, and on the W. by Hanover, Denmark, and Lübeck; area, 6,266 square miles. It is divided into:

MECKLENBURG-SCHWERIN (-shvā-rēn'), former GRAND-DUCHY OF; a state of northern Germany bounded on the N. by the Baltic, on the E. by Pomerania and Mecklenburg-Strelitz, on the S. by the province of Brandenburg, and on the W. by Lüneburg and Lauenburg, and part of Mecklenburg-Strelitz; area 5,135 square miles; pop. about 650,000. The surface is undulating and the soil generally fertile. The climate is mild and healthful. The principal rivers are the Rechnitz, Warnow, Stepnitz, the Elbe, a tributary of the Elbe, and others. Products, wheat, corn, hemp, flax, tobacco, etc. Manufactures, woolen and linen fabrics, cotton, paper, and glass; Mecklenburg-Schwerin is famous also for its distillation of corn-spirits, and has an extensive trade in farm produce. With the exception of between 3,000 and 4,000 Jews, the inhabitants are nearly all Lutherans. In 1872 the army was incorporated with that of Prussia. The only commercial towns and ports of consequence are Schwerin, Rostock, Wismar, and Ludwigslust. Schwerin is the political capital, but Ludwigslust was the usual summer residence of the former grand-duke. At Rostock is one of the oldest of the German universities (founded in 1419). The former grand-duchy became a republic in November, 1918.

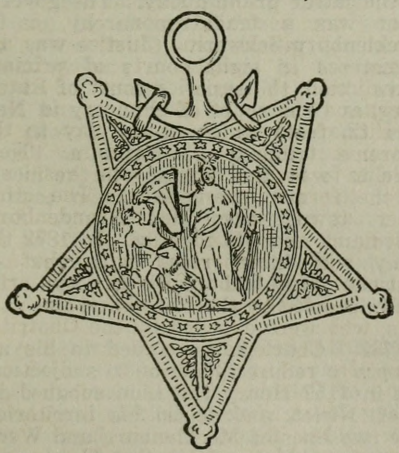
MECKLENBURG-STRELITZ (strā'lits), former GRAND-DUCHY OF, a state of northern Germany, consisting of two separate territorial divisions: the first and largest, the former duchy of Stargard, bounded on the W. by Mecklenburg-Schwerin, and surrounded on all other sides by the Prussian territories; the second, the former principality of Ratzeburg; united area, 1,131 square miles; pop. about 105,000. The general features of the country are the same as those described in the above article. Its mean elevation is, however, somewhat less than that of Mecklenburg-Schwerin, though the Helpterburg, near Woldeyk, rises to 640 feet above the sea. The chief river in Stargard is the Havel, and in Ratzeburg the Stepnitz. The land was divided among the sovereign, the nobility, and the towns, in the proportion of about seven-tenths to the first, two-tenths to the nobles, and one-tenth to the municipalities. Nearly one-fourth of the former grand-ducal property consisted of forest lands. Agriculture and cattle breeding are the chief branches of industry here, as in Mecklenburg-Schwerin. The manufactures are even more insignificant than in the latter grand-duchy. The government was a feudal monarchy, as in Mecklenburg-Schwerin. Justice was administered in eight courts of primary jurisdiction, the superior court of Ratzeburg, and the court of chancery in New Strelitz, from which appeal lay to the supreme tribunal at Parchim. Neu-Strelitz was the capital and residence of the former grand-duke. The other chief towns are Neu-Brandenburg, Friedland, and Old Strelitz. In 1872 the army was incorporated with that of Prussia. Mecklenburg-Strelitz was originally peopled by the Heruli and the Vandals, who were expelled by the Obotrites in 782. Charlemagne failed in his attempts to reduce this tribe to subjection; but in 1159 Henry the Lion subdued its chief, Niclot, and seized his territories. The two lines of Mecklenburg and Werle were founded by John the Theologian, and Niclot, on the death of their father, Henry Burwin II., in 1236. The latter became extinct in 1436. The entire duchy was conferred on Wallenstein by the emperor Ferdinand II., Mar. 4, 1628; but in 1631 it was again restored to Adolphus

Frederick and John Albert, then existing representatives of the lines of Mecklenburg-Schwerin and Mecklenburg-Güs-



THE MEDAL OF HONOR, UNITED STATES ARMY

trow. The division of the entire duchy between the grand-duchies of Strelitz and Schwerin was effected Mar. 8, 1701. In

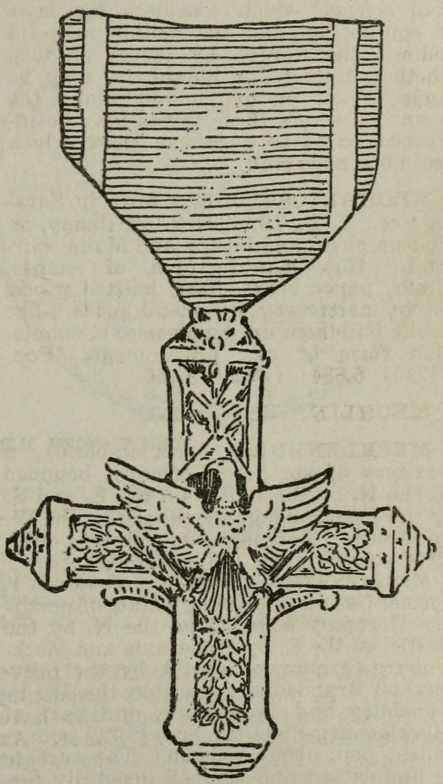


THE MEDAL OF HONOR, UNITED STATES NAVY

1815 the dukes assumed the title of grand-duke. In November, 1918, Mecklenburg-Strelitz was proclaimed a republic.

MECKLENBURG DECLARATION, a resolution said to have been adopted in May, 1775, at a midnight meeting of representatives of the militia of Mecklenburg co., N. C. It declared that the people of that county were free and independent of the British crown, and not only was its general tenor that of the Declaration of Independence, but many phrases are word for word as in that document. The minutes of the midnight meeting were destroyed by fire in 1800.

MECONIC ACID, in chemistry, $C_7H_4O_7$. One of the constituents of opium discovered by Sertürner in 1805. It is prepared

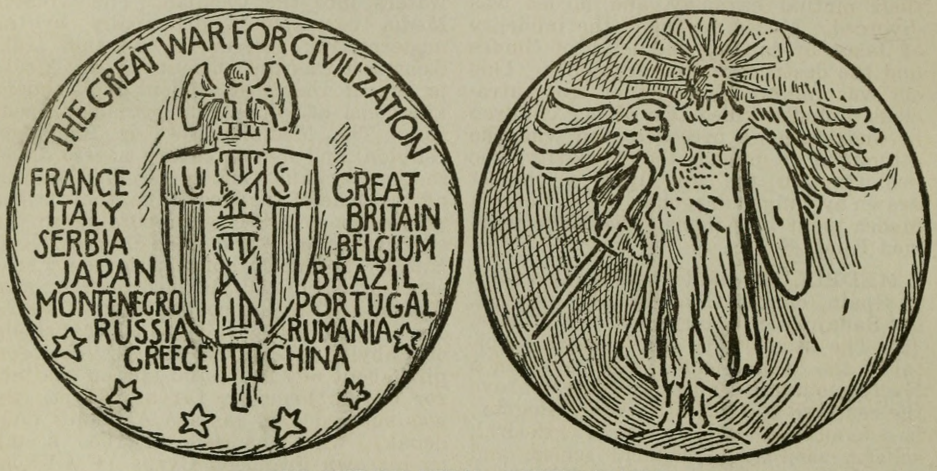


THE DISTINGUISHED SERVICE CROSS, UNITED STATES ARMY

from the alcoholic extract of opium by precipitating with baric chloride and decomposing the baric meconate with sulphuric acid. It crystallizes in colorless, mica-like plates or prisms, containing three molecules of water, with difficulty soluble in cold water and ether, but more readily in hot water and alcohol.

MEDAL OF HONOR (United States). Awarded for bravery on the battle field. Instituted in 1862 and authorized by

Congress. In 1905 a new Medal of Honor, a five-pointed star in rose-gold, was adopted. In the center is a head of Minerva in relief, surrounded by a band, inscribed "United States of America." A laurel wreath of green enamel surrounds the star with a bar above, inscribed "Valor," surmounted by an eagle. The decoration hangs from a watered-silk blue ribbon emblazoned with 13 white stars. The reverse of the medal is left plain for the recipient's name, which is preceded by "The Congress to—" Until this decoration was instituted, the United States had no military decoration equivalent to the Victoria Cross of Great Britain. In 1917 Congress authorized the issue of a new Medal of Honor, differing slightly in design and to be awarded to members of the army and navy for valor in the World War.



THE VICTORY MEDAL, UNITED STATES

MEDAL OF HONOR LEGION (United States). A patriotic society consisting of officers and enlisted men who have been awarded the Medal of Honor. As organized in 1890, only those who fought in the Civil War were admitted to membership, but afterward the privilege was extended to all who had received the medal regardless of the war in which it was won.

MEDALS, a medal in its modern signification, is independent of the coin and sculptured medallion, being a piece of metal, resembling a coin in form and size, stamped with images and inscriptions to honor a person or commemorate an event. The Greeks and Romans made profuse use of them, as a record of events in their respective histories, and the art was revived in Europe at the period of the Renaissance. In France it has risen to great perfection, and the series of national medals, beginning under Louis XI., illustrates almost every great event in French history. The fashion spread to England where the battle medals form an excellent series. In Italy princes and popes on ascending the throne commemorated the event by striking medals bearing their portraits, and in the papal series particularly the greatest artists Italy has produced did the work of engraving. The art has had an increasing development in the United States and there are portrait medals of all the American presidents. Chief among the engravers of medals in modern times have been Vittorio Pisani of Italy, Jacques Wiener of Belgium, and Roty and Chaplain in France. Midway between sculpture and painting, as Vasari held it to be, and working in the miniature, the art has been shown capable of great expression and beauty. Such works as the "Study" of Roty or his "Medal Wedding" rival the larger arts in their depth and wealth of detail. See SERVICE MEDALS AND DECORATIONS.

MEDEA (mē-dē'ä), a celebrated magician of classic fable, daughter of Æetes, King of Colchis, and the niece of Circe. When Jason came to Colchis in quest of the golden fleece, Medea became enamored of him, and it was to her arts that the Argonauts owed their preservation. Medea had an interview with her lover in the temple of Hecate, where they bound themselves by the most solemn oaths and promised eternal fidelity. No sooner had Jason overcome all the diffi-

culties which Æetes had placed in his way than Medea embarked with the conquerors for Greece. To stop the pursuit of her father, she tore to pieces her brother Absyrtus, and left his mangled limbs in the pass through which Æetes was to travel. Her conduct to the daughter of Pelias, and her refusal to bring Pelias to life after they boiled his flesh in a caldron, greatly irritated the people of Iolchos, and Medea, with her husband, fled to Corinth. Here they lived for 10 years; but the love of Jason for Glauce, the king's daughter, soon interrupted their mutual harmony, and Medea was divorced. Medea revenged the infidelity of Jason by causing the death of Glauce and the destruction of her family. This act was followed by another more atrocious. Medea killed two of her children in their father's presence, and when he attempted to punish the barbarity, she fled through the air upon a chariot drawn by winged dragons. From Corinth Medea went to Athens, where she married King Ægeus.

MEDELLIN (mā-del-yēn'), (1) a town of Spain, on the Guadiana, 66 miles E. of Badajoz; the birthplace of Cortes. (2) The second city of Colombia, capital of the department of Antioquia, in a lovely mountain valley, 4,850 feet above the sea, and 150 miles N. W. of Bogota; is a handsome town, having a cathedral, college, seminary, technical school, and manufactures of pottery, porcelain ware, cigarettes, and jewelry; has a considerable trade, exporting gold and silver; pop. about 71,000.

MEDFORD, a city in Middlesex co., Mass.; on the Mystic river, and on the Boston and Maine railroad; 5 miles N. W. of Boston. There are Tuft's College, a high school, public library, electric light and street railroad plants, waterworks, and the Craddock House, said to be the oldest building in the United States. The city has brick yards, machine shops, dye works, large fruit works, and boot and shoe, and carriage factories. Pop. (1910) 23,150; (1920) 39,038.

MEDFORD, a town in Jackson co., Ore., 5 miles E. of Jacksonville, on the Southern Pacific and other railroads. Has U. S. Weather Bureau Station and five public buildings. Center of a rich agricultural district, and is adjacent to the National park. Has large refining industries and city-owned waterworks. Pop. (1910) 8,840; (1920) 5,756.

MEDIA (mē'diä), in ancient geography, a country of Asia, which extended on the W. and S. of the Caspian Sea, from Armenia and Assyria on the N. and W., to Farsistan or Persia proper on the S.; and included the districts now called Shirvan, Azerbeijan, Ghilan, Mazanderan, and Irak Adjemi. It had two grand divisions, of which the N. W. was called Atropatene, or Lesser Media, and the S., Greater Media. The former corresponds to the modern Azerbeijan, now, as formerly, a province of the Persian empire, on the W. of the Caspian, surrounded by high mountains of the Tauritic range, except toward the E., where the river Kur, or Cyrus, discharges its waters into the Caspian. The Greater Media corresponds principally to the modern Irak Adjemi, or Persian Irak. Ecbatana was the ancient capital. Media is one of the most ancient independent kingdoms of which history makes mention. The Medians were in language, religion, and manners very nearly allied to the Persians. After they had shaken off the yoke of the Assyrians, their tribes united about 708 B. C., according to the common account, and chose Dejoces (Kai-Kobad) for their chief. His son Phraortes, or Arphaxad, subdued the Persians. Cyaxares (Kai-Kaous), the son of Phraortes, in alliance with Nabopolassar, King of Babylon, overthrew the Assyrian empire about 604 B. C., and spread the terror of his arms as far as Egypt. He was succeeded by his son Astyages (Asdehak), who was deposed (560 B. C.) by his own grandson Cyrus (Kai-Khûsru), King of Persia; and from this time the two nations are spoken of as one people. Ecbatana, the capital of Media, became the summer residence of the Persian kings. After the death of Alexander the Great (324 B. C.), the N. W. portion (Atropatene) became a separate kingdom, and existed till the time of Augustus; the other portion, under the name of Great Media, forming a part of the Syrian monarchy.

MEDICAL ASSOCIATION, AMERICAN, a society formed in 1847, having for its purposes the promotion of the science and art of medicine and the safeguarding of the profession. The officials of the association meet at regularly appointed dates in various cities and the members are invited to the annual sessions. The members now number about 80,000 and more than half of them are fellows. The central offices are in Chicago, where a weekly journal of the association is issued, and where the business conduct, working through delegates from every State, originates.

MEDICAL DEPARTMENT, UNITED STATES ARMY. See MILITARY ORGANIZATION, UNITED STATES.

MEDICAL DEPARTMENT, UNITED STATES NAVY. See NAVY, UNITED STATES.

MEDICAL EDUCATION. In ancient times almost all medical teaching was given by masters to their pupils without the use of formal schools. But the names of Hippocrates and Galen, who were in classical days in great repute, show that the teachers of medicine were held in honor. Almost all the surgeons and physicians were slaves, and Greek and Latin comedy is full of jests aimed at the doctor. In the Middle Ages and the Renaissance much of medical education was formal and traditional. With the emergence of the great European universities in the twelfth and succeeding centuries, medical education gradually obtained a distinct place.

Thomas Linacre (c. 1460-1524) is popularly regarded as having been the first to give the study of medicine a university status at Oxford. In Scotland a medical school was founded at St. Andrews in 1411, and at the University of Edinburgh in 1582.

In the United States the earliest medical schools took their origin from occasional lecture courses. At the opening of the Revolution it is estimated that there were in the thirteen colonies 3,500 practitioners, of whom about 400 had medical degrees. In our early history many doctors were educated at Edinburgh, but more obtained their training by serving as apprentices under well known physicians. In 1750 Dr. Thomas Cadwallader was lecturing in anatomy in Philadelphia, where in 1765 the medical department of the College of Philadelphia, later the University of Pennsylvania, was founded. In 1767 the medical department of Kings College, later Columbia University, was opened, followed in 1782 by the foundation of the medical department of Harvard and in 1798 and 1820, respectively, of Dartmouth and Bowdoin. In the middle of the nineteenth century many proprietory schools of medicine had been established, in which the teachers divided all fees and conducted the administration on purely commercial lines.

During the past thirty years American medical schools have been vastly improved. For example, at one time the degree of M.D. was granted to the students who had attended for one year a course of lectures; later the period was extended to two years, then to three, and now universally to four and in some cases to five. At the same time the quality of men entering medical schools has been improved until now some schools require for admission the baccalaureate degree, and all schools of reputation, at least the equivalent of two years in college. This has meant a diminution both in the number of schools and students, but a very marked gain in quality. For example, in 1906 the United States had 162 medical schools, or over half the world's supply. In 1920, through the elimination of poor schools and consolidation, this number has been reduced to 86. In 1904 there were 28,142 medical students; in 1920, only 13,554. But higher enrolments are in prospect, and medical schools of a high grade can satisfactorily teach 17,000 or 18,000 students, which number will in all probability supply the demand for some years to come. For statistics show that in August, 1919, the United States had one physician to every 720 people, as compared with one to 1,500 in Great Britain. There is, therefore, no scarcity of physicians in the United States, but a very imperfect distribution of the supply.

There are to-day medical schools in 37 of the 48 States and in the District of Columbia. The States that have no schools—Rhode Island, New Jersey, Delaware, Florida, New Mexico, Arizona, Idaho, Montana, Nevada, Wyoming and Washington—have medical schools in close proximity or are sparsely settled. From the standpoint of abundant clinical facilities and large hospitals and dispensaries, the centers of population have obvious advantages as sites for medica' schools, and the tendency is very clearly in that direction.

Medical education, thus, has fairly kept pace with the great advance in medical science and art which has been achieved in the past forty years. Medicine can now be regarded as a science. Knowledge in its domain is obtained by following the methods of science, and the application of this knowledge has been of incalculable value to mankind. Formerly medicine was concerned merely with the treatment of the sick individual, and the measures directed toward this were empirical and traditional. The fact that most diseases were self-limited and tended to recovery was not appreciated, and treatment, though not usually harmful, had little or no effect on the disease. With the new knowledge, the prevention and medical care of disease has been placed on a rational basis and a new conception of the relation of medical service to society has arisen. Modern medicine seeks, first, to prevent disease, this being made possible by knowledge of the causes of disease and the mode of action of these causes; second, the recognition of disease in its early stages when

cure can most easily be effected; third, the care of the patient during the critical period of disease; fourth, the alleviation of suffering and the prolongation of life in incurable disease. To the attainment of these aims medical education is directed. No department of education has experienced such advance both in methods and ideals as has medicine in the past thirty years, and although all countries have shared in this advance, it has been particularly marked in America. Medical schools in the United States are now among the best in the world. Changes affecting a few of the best schools were slowly inaugurated, but the great advance began in 1902, when the American Medical Association formed a Council of Medical Education. This council made a thorough examination of all the medical schools of the country and graded them according to the facilities for education which each possessed. All facts ascertained were published and the primary effect was the elimination of the numerous inferior schools and the combination of others. At about the same time the different States demanded a license for the practice of medicine, which was granted after examination of the candidate by a board of examiners, and the results of these examinations, with the names of the schools at which the candidates had studied, were published. Education was further improved by the formation of medical faculties in the various universities, thus giving medicine the advantage of association with other departments of science and participation in university ideals, and scientific research in medicine, to which formerly but little attention was given, has become a dominant ideal.

A medical school of the first grade must now possess a liberal endowment, for it cannot be supported by the fees of the students; well-equipped laboratories for anatomy, physiology, medical chemistry, pathology, bacteriology and preventive medicine, all directed by men who devote their entire time to teaching and research; a close connection with one or more endowed and well-equipped hospitals in which the students have the privilege of bedside study and exercise in methods of diagnosis and treatment. Such hospitals serve three well-defined purposes: the cure of the sick, medical research by which knowledge is increased, and teaching by which knowledge is disseminated. The requirements for admission in most of the medical schools are a high school education plus two years of college work, in which courses in physics, chemistry and French or German have been taken. The medical course is four years of nine months each, and the instruction is more or less divided into that of the sciences underlying medicine, such as anatomy, physiology, pathology, etc., which are given in the first two years, and the clinical instruction in medicine, surgery and obstetrics, which occupy the last two. The lecture system, though not entirely given up, holds a subordinate place in instruction, most of the time of the student being spent in laboratory work or in the hospitals, where he studies the products of disease and the physical and chemical methods used in diagnosis. After graduation the student serves another year as an interne in a hospital, not necessarily connected with a school, where he has the care of the patients under direction. A student passing through such a course is fitted for general service in medicine, but should he elect to enter into any of the main specialties of medicine, further training is necessary. The strongest criticism which can be made against the present system of medical education is that the student is too old when he graduates. The medical course is rarely begun before the age of twenty-one, which brings graduation and the hospital year to the age of twenty-six. This defect, if it be such, can best be met not by shortening the medical course, but by improving the character of the preparatory education, so that the student can acquire at the age of eighteen what he now has at twenty-one.

MEDICAL JURISPRUDENCE, that branch of state medicine which is concerned with the administration of justice.

MEDICI (med'ē-chē), a distinguished Italian family of Florence, whose historical fame begins in 1351 with GIOVANNI DE MEDICI, who with a small body of 100 men forced his way through a Milanese army which was besieging the fortress of Scarperia and relieved the place. His son, SALVESTRO, who enjoyed the rank of gonfaloniere from 1378 to his banishment in 1381. GIOVANNI, his son and successor, distinguished for his commercial enterprise, and for promoting the interests of the republic, flourished 1360-1428.

COSMO, one of the sons of the latter, surnamed "Father of his Country," born in 1389. He early took part in the important commercial concerns of his father, and also in the government of the republic. In 1433, Rinaldo de Albizzi, head of a party opposed to the Medici, obtained the chief magistracy, and Cosmo was banished for 10 years. He settled

at Venice, and there founded the library in the monastery of St. George. After one year he was recalled, and his life was thenceforth peaceful and prosperous. As chief magistrate Cosmo acted with consummate prudence. His influence on the political movements of Italy was immense. He once saved Florence from a war with Naples and Venice by calling in debts from these two States, and so incapacitating them from making war. In his latter years he applied himself to study, especially of the Platonic philosophy, and to farming. He died Aug. 1, 1464. PIERO I., his son and successor; born 1414, became the victim of a revolt in 1469.

LORENZO, usually styled The Magnificent; born Jan. 1, 1449, and the son of Piero, was carefully educated, and early initiated in state affairs. At the age of 20 he married Clarice, a noble lady of the Orsini family, and the same year, 1469, succeeded his father as head of the Florentine republic. His will was supreme and almost unquestioned, and a general license and corruption of morals made it easy for him to be tyrant. Literature, philosophy, and art engaged the attention of Lorenzo no less than political affairs. The quiet of his reign was interrupted, in 1478, by the conspiracy of the Pazzi, to which Pope Sixtus IV. was a party, and which had for its object the overthrow of the Medici. The conspirators attacked Lorenzo and his brother Giuliano in the Duomo, when the latter was killed and Lorenzo narrowly escaped. The chiefs and many of the associates of the conspiracy were executed. The Pope then excommunicated Lorenzo, allied himself with the King of Naples, and declared war against Florence. Lorenzo, with happy boldness, went as his own ambassador to Naples, and succeeded in detaching the king from the papal alliance; fear of the Turks induced the Pope soon after to make peace. In the spring of 1492 he fell ill and retired to his villa at Careggi. He died in Careggi April 8, 1492. Lorenzo was author of numerous lyrical and other short poems, many of them of a licentious character, and some devotional. He had three sons: GIOVANNI, who became Pope as LEO X. (*q. v.*), GIULIANO, and PIERO. The latter, Piero II., born Feb. 15, 1471, succeeded Lorenzo, and was deprived of his estates when the French invaded Italy in 1494. He was drowned Dec. 28, 1503, leaving two sons, Lorenzo and Cosmo. GIULIANO, brother and successor of Piero, abdicated in favor of Lorenzo, 1513, and became Duc de Nemours by his marriage with the aunt of Francis I. He died March 17, 1516. LORENZO II., eldest son of Piero II., came to power by the abdication of his uncle, and governed under the influence of Leo X., who invested him with the duchy of Urbino. He died May 4, 1519, leaving an only daughter.

CATHERINE DE MEDICI; born in Florence in 1519. She married the Duke of Orleans, who became Henry II. of France, and her children were Francis II., Charles IX., Henry III., and Marguerite of Valois. Catherine de Medici was Queen Regent of France from 1560 to 1563. She died in Blois, Jan. 5, 1589. ALESSANDRO, proclaimed duke of Florence in 1532, was stabbed by his relative Lorenzino, after poisoning his cousin Hippolytus, 1537. LORENZINO, murderer of Alessandro, was assassinated at Venice by order of Cosmo I., 1548. COSMO I., called "The Great," Duke of Florence, and Grand Duke of Tuscany, was the son of Giovanni, the "Invincible," descended from Lorenzo, and was born June 11, 1519. He was raised to power by the influence of Charles V., and abdicated in favor of his son, 1564. In 1569 he became Grand Duke of Tuscany, and died April 21, 1574. FRANCESCO MARIA, son and successor of Cosmo (1541-1587), and left only a daughter, MARIE DE MEDICI, born in Florence, April 26, 1573. She became queen consort of Henry IV. of France. She died in Cologne July 3, 1642. FERDINANDO I., brother and successor of Francesco, was also cardinal and Grand-Duke of Tuscany, 1551-1609. COSMO II., son and successor of Ferdinando I., 1590-1621. FERDINANDO II., son and successor of Cosmo II., 1610-1670. COSMO III., son and successor of Ferdinando II., 1642-1723. GIOVANNI GASTON, son and successor of the latter, was the last of the Medici who reigned over Tuscany, being compelled to abdicate and make way for Francis II., Duke of Lorraine, by the great Powers. He flourished 1671-1737. His daughter, ANNA, wife of John William, elector-palatine, was the last of the family. She died in 1743.

MEDICINE, a remedy, a remedial agent, an antidote to disease; any substance prescribed for the alleviation or removal of disease. Medicines are administered, as a rule, by the mouth, but sometimes also by the rectum, by inhalation into the lungs, by hypodermic injection into the cellular tissue, or in some rare cases by injection into the veins. The Egyptians are credited with some proficiency in the art; their embalming of bodies must have taught them the elements of anatomy. The medical and sanitary arrangements of the Mosaic law are well known. Chiron, the fabled Centaur, is said to have brought some knowl-

edge of medicine from Egypt to Greece. His pupil was Æsculapius, said to have lived previously to the Trojan war [about 1500 B. C. (?)]. He was so eminent a physician that he was, on his death, deified, and became the Greek god of medicine, under whose auspices all further researches were made. Pythagoras, about 529 B. C., studied the human frame; but the "father" of Greek medicine was Hippocrates, 460-357 B. C. He is by some considered the founder of the dogmatic school. About 332 B. C. the Alexandrian school arose, under Eratosthenes and Hierophilus. The latter was opposed by Chrysippus, and the empiric school arose. The Romans were long in entering the field. The greatest Roman physician was Galen, A. D. 165. The Methodics had arisen shortly before, and the Eclectics were ramifications of the former. From the 7th to the 12th century the Arabs cultivated medicine; their greatest name was Avicenna, about A. D. 1020. The Italians next assumed the lead. The dogmatic school of medicine was assailed by Paracelsus (1493-1541) and Vesalius (1514-1564). The discovery by Harvey, in 1628, of the circulation of the blood, gave a great impulse to medical science.

Modern medicine owes its greatest debt to Virchow, Pasteur, and Lister. They first determined that tissues were composed of various cells and that types of diseased structure of tissues could be identified by the predominating cell form in each. Pasteur founded the science of bacteriology, and Lister, who died in 1912, was the apostle of antiseptics, revolutionizing surgery. By insisting that wounds should be kept clean, and the operator and instruments, as well, the use of carbolic to purify the air, and antiseptic dressings, surgeons carried out successfully operations never attempted before. Transfusion of blood, which saved many lives, marked another triumph against disease. Tuberculosis is yielding to medical science. The discovery of X or Roentgen Rays for photographing invisible organs has been a great aid in disease. The bacterial origin of typhus, transmitted by body lice and insects, was made known in 1915. In the World War only 4 per cent. died of disease.

MEDICINE HAT, capital of the electoral division of Medicine Hat, Alberta, Canada, on the South Saskatchewan river, Canadian Pacific railway, 165 miles S. E. of Calgary. Seat of Dominion Land Office. Has coal mines, gas wells, railway machine shop, grain elevator, and planing mills. Pop. about 7,500.

MEDICINE MAN, an important personage among the Indian tribes who combines the powers of a wizard, necromancer, seer and prophet.

MEDINA, a village of Orleans co., N. Y., 41 miles W. of Rochester, on Oak Orchard creek, Erie canal, and New York Central and Hudson River railroad. Center of rich agricultural district and has manufactures of iron, furniture, pumps, pipes, and cigars. Picturesque Medina Falls are near by. Pop. (1910) 5,683; (1920) 6,287.

MEDINA (me-dē'nä), or **MEDINET-EL-NABI** (me-dē'net-el-nä'bē), "the town of the prophet," one of the sacred cities of Arabia. It is, next to Mecca, the great center of attraction to Mohammedan pilgrims, from its connection with the founder of the Mohammedan faith. This celebrated city stands in a plain, close to a chain of hills which bounds the great desert W. It is of an irregular oval form, within a walled inclosure of 35 or 40 feet high, flanked by 30 towers, which render Medina the chief stronghold of Hedjaz. Its most prominent building is the great mosque, Al-Harem, supposed to be erected on the spot where Mohammed died.

MEDINA SIDONIA (mā-*th*ē-nä sē-dō'nē-ä), a city of Spain, 25 miles S. S. E. of Cadiz; on an isolated hill overlooking a wide plain; has the ruins of a castle, the ancestral seat of the dukes of Medina Sidonia, descendants of Guzman the Good, conqueror of Tarifa (1292), a member of which house commanded the "invincible Armada." Pop. about 12,000.

MEDITERRANEAN SEA, a large and important inland sea, bounded on the N. by Europe, on the E. by Asia, on the S. by Africa, and communicating at its W. extremity by the Straits of Gibraltar with the N. Atlantic Ocean, and at its N. E. extremity, by the Dardanelles and Bosporus, with the Black or Euxine Sea; extending from lat. 30° to nearly 46° N., and from lon. 5° 54′ W. to 36° 8′ E.; greatest length, 2,300 miles; greatest breadth, from Venice to the Bay of Sidra, 1,200 miles; area, est. 690,000 square miles. It is of an oblong, but irregular shape, especially on the N., where the large peninsulas of Italy and Greece project S. The coast of the Mediterranean is as remarkable for the difference of altitude as for variety of outline. In the N., with the exception of Italy, it is bold and rugged. On the E. and S. the country presents a low uninteresting flat, with rocky reefs and shoals projecting 5 to 7 miles from the shore, and which render the navigation near these shores

both difficult and dangerous; and in this respect the S. side presents a striking contrast to the N., where, generally speaking, deep soundings may be had close to the shore; while in parts, particularly between Nice and Genoa and near Gibraltar, no soundings can be found under 1,000 fathoms and upward. The temperature averages from 72° to 76°, or 3½° F. higher than that of the Atlantic Ocean. The principal rivers which flow into the Mediterranean are the Ebro, Rhone, Po, and Nile. The Mediterranean was long considered tideless, but this is untrue, as in the Adriatic, as well as between that sea and the coast of Africa, the tide rises from 5 to 7 feet. The prevalent winds vary during the spring between S. E. and S. W.; at other times from N. W. to N. E. The most formidable of these winds is the sirocco, or solano, which is very destructive. Water spouts are of frequent occurrence, especially along the coast of Asia Minor. Several springs of fresh water rise in different parts of the Mediterranean; the largest being in the port of Tarento, near the mouth of the Galesus, where the fresh water ascends with such impetuosity and in such a volume that it may be taken up at the surface without the least impregnation of salt.

MEDJIDIE (me-jē'dē), a Turkish order of knighthood, instituted in 1852. It has been conferred on numerous foreign officers, soldiers, and seamen, who have taken part in wars on behalf of Turkey. Also a Turkish coin, value about $4.50 (gold); silver, about 80c.

MEDLAR, a much-branched spinous tree. The leaves are obovate or oblong-lanceolate, entire or serrulate, pubescent beneath; the flowers white, with a woolly calyx; the fruit half an inch or an inch in diameter; depressed at the top. It is eaten raw, but not till it is rotten. The large-flowered medlar is *Pyrus* (*mespilus*) *grandiflorus;* the medlar of Japan, *Eriobotrya japonica*; the medlar of Surinam is one of the Sapotaceæ, and the West Indian medlar *Mimuspos elengi.*

MEDULLA, a medical term for marrow. It exists chiefly in the central canal, in the long bones; blood-vessels, and even nerves, have been traced going in for the nutrition of the osseous tissue.

MEDULLA OBLONGATA (-gā'tä), the cranial prolongation of the spinal cord, of similar structure, but differing by a peculiar arrangement of the strands of the cord before entering into and forming a connection with the brain. In it are found the great ganglionic centers which control respiration, deglutition, vomiting, etc. Pressure of the medulla oblongata and not strangulation is the actual cause of death in judicial hanging. It is formed of two lateral columns, each divided into three smaller ones, and passes through the pons Varolii, terminating in the crura cerebelli.

MEDUSA (-dū'sä), in classical mythology, one of the Gorgons who, giving offense to Minerva, had the fine hair, on which she prided herself, turned to serpents; her eyes were also endowed with the power of converting every one who looked at her into stone. There are some unimportant variations in the myth.

Medusæ (the plural): Jelly-fishes, or of the family *Medusidæ.* It consists of an umbrella-like disk surrounded by numerous short filiform tentacles.

Medusæ (the plural): Jelly-fishes, or sea-nettles, a sub-class or order of Hydrozoa. It is called *Discophora.*

Head of Medusa: In astronomy, a portion of the constellation Perseus, who is supposed to carry the head of Medusa in his left hand. It contains the variable or periodic star Algol.

MEEANEE, or MIANI (mē-ä'nē), a village in Sind, India, on the Indus, 6 miles N. of Hyderabad. It was the scene of a battle between Sir Charles Napier with 2,800 men and a Baluch army, 22,000 strong, on Feb. 17, 1843; the latter were totally routed, losing 5,000 men; the British loss was 256. The result of this victory was the conquest and annexation of Sind.

MEERSCHAUM, a peculiar silicated magnesian mineral found in several parts of Europe, but mostly in Greece and Turkey. In the last-mentioned country it is extensively used as fullers' earth; but in Austria and Germany it is adapted to the manufacture of tobacco pipes.

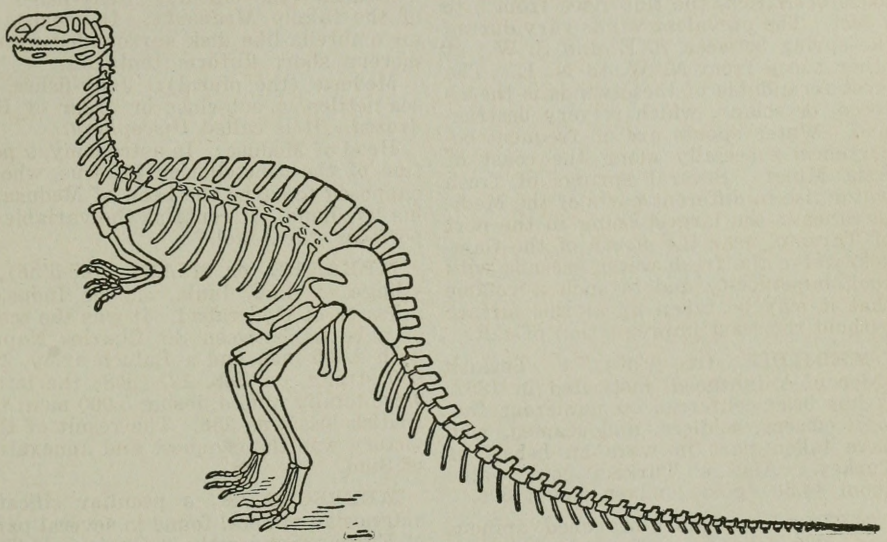
MEERUT (mē'-), or more correctly **MERATH** (mē'räth), a town, district, and division in the Northwestern Provinces of British India. The town lies 40 miles N. E. of Delhi, about half-way between the Ganges and the Jumna. Here in 1857 the great mutiny broke out. Pop. about 116,000.

MEGÆRA (me-jē'rä), one of the Furies.

MEGALONYX (-lon'iks), a genus of large, sloth-like edentates from the post-Pliocene of North America. It has the same dental formula as Megatherium and Mylodon. The fore limbs are shorter than the hind limbs, and the calcaneum is excessively long. The animal was named in 1797 by Jefferson, President of the United States, who thought the remains

were those of a gigantic carnivore at least five feet in height. Cuvier was the first to recognize Megalonyx as an edentate.

MEGALOSAURUS (-sâ'rus), a gigantic Oölitic reptile of the Deinosauria (Orthoscelida, Huxley), occurring also in the Weald Clay. Its length has been variously estimated from 40 to 50 feet. Owen says that some of the remains "indicate a reptile of at least 30 feet in length." As the cylindrical bones contain medullary cavities, it is clear that Megalosaurus was terrestrial. That it was carnivorous is evidenced by the teeth.



SKELETON OF MEGALOSAURUS

The oldest known beds from which any remains of Megalosaurus have been obtained are at the Lower Oölites at Selsby Hill and Chipping Norton, Gloucestershire, England.

MEGALOTIS (-ō'tis), a genus of *Candidæ*, differing from other members of the family in its dental formula, which approximates to that of the Civets. It contains but a single species, *M. lalandii*, the long-eared fox.

MEGAPHONE, an instrument invented by Thomas A. Edison for carrying the sound of the voice long distances without the aid of wires.

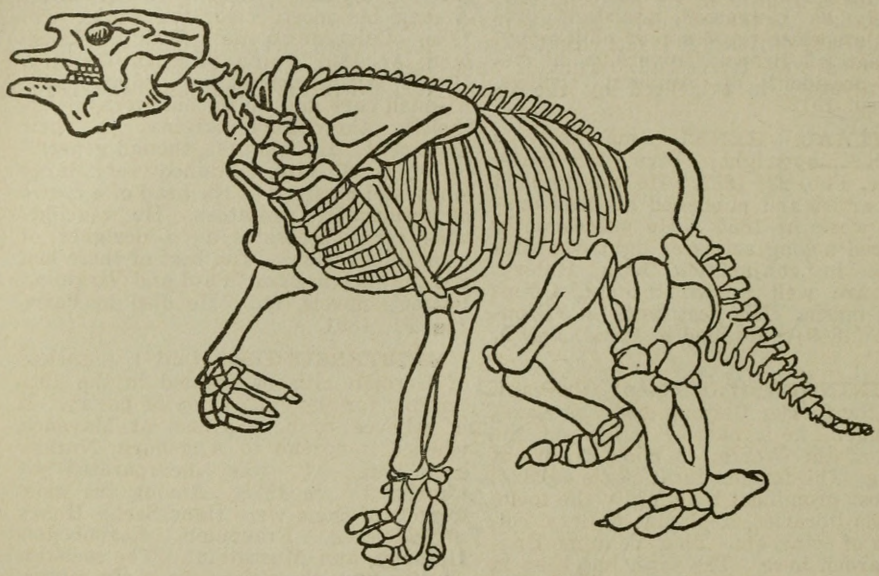
MEGAPODIUS (-pō'di-us), mound-bird; the typical genus of the family *Megapodidæ;* often referred to the *Cracidæ*. Authorities vary greatly as to the number of species. They are found in the Samoa Islands, the Tonga group, the New Hebrides, the N. portion of Australia, in New Guinea and the neighboring islands, in the Celebes, the Pelew islands, the Ladrones, the Philippines, Labuan, and the Nicobars. They are about the size of small fowls, the head generally crested, the tail very short, feet enormously developed, and, with the exception of *Megapodius wallacii*, from the Mollucas, have somber plumage.

MEGAPTERA (-gap'tur-ä), the humpbacked whale. *M. longimana* is the long-finned whale, found in the Atlantic area, as far as Davis' Straits; *M. lalandii* is the Cape humpback, from the South Atlantic; *M. novæ zelandiæ* is from the South Pacific; and *M. kuzira*, the Japanese humpback, ranges to the Aleutian and Californian coasts. They yield little oil or baleen. An adult averages 50 feet in length.

MEGARIS (meg'a-ris), in ancient geography, a small mountainous region of Hellas, or Greece proper, lying between Attica and the Isthmus of Corinth. The people were excellent sailors, and founded several colonies, of which the most famous were Byzantium (667 B. C.), Chalcedon, and Megara (Hyblæa) in Sicily. The capital was Megara, long an important commercial city, and famous for its white shell marble, and for a white kind of clay, of which pottery was made.

MEGATHERIUM (-thēr'i-um), a genus of extinct edentates, family *Megatheriidæ*, founded on a nearly complete

skeleton discovered on the banks of the Lujan, about 9 miles from Buenos Aires, and sent by the Marquis of Loretto, the viceroy, to the Royal Museum of Madrid. There are two skeletons in England; one found near Rio Salado, in 1832, now in the Museum of the College of Surgeons; the other, found at Luxan, in 1837, now in the British Museum of Natural History, South Kensington. The best-known species, *M. americanum*, was nearly as



SKELETON OF MEGATHERIUM

large as an elephant, though the limbs were shorter. Its mounted skeleton measures 18 feet in length, of which the tail occupies five.

MEGHNA (megh'-), a river or estuary of Bengal, which carries the waters of the Ganges and the Brahmaputra to the sea; its most noteworthy characteristic is the "bore" or tidal wave which advances swiftly at the height of 20 feet.

MEHEDINTSI, Rumania, a departmental unit of administration in the W. part of the country, lying between the Banat and Transylvania, bounded on the S. by the Danube river. Pop., mixed Rumanian and Magyar, about 250,000. Area, 1,910 square miles. The chief center is Turnu-Severin.

MEHEMET ALI (mā'he-met ä'lē), Viceroy of Egypt; born in Kavala, Macedonia, in 1769. He entered the Turkish army, and served in Egypt against the French; rose rapidly in military and political importance; became Pasha of Cairo, Alexandria, and subsequently of all Egypt. Together with his son Ibrahim he aided in bringing a large part of the Sudan under Egyptian rule. In 1824-1827 he assisted the Sultan in endeavoring to reduce the Morea, which led to the destruction of his fleet by the allied European powers at Navarino (1827). Subsequently he turned his arms against the Sultan, and in his efforts to secure dominion over Syria by armed invasion, he was so far successful that the European powers had to interfere and compel him to sign a treaty in 1839, which gave him the hereditary pashalic of Egypt in lieu of Syria, Candia, and Hejaz. In his latter days he sank into dotage. He died in Cairo, Egypt, Aug. 2, 1849.

MEIGHEN, THOMAS, Premier of Canada; born in 1876, at St. Marys, western Ontario. He graduated from Toronto University in 1897 and for a short time after taught school. He removed to Winnipeg where, after studying law, he was admitted to the bar in 1903. He entered politics and in 1908 was elected as a Conservative to the Dominion Parliament. He soon became notable as a speaker, and was re-elected in 1911. Two years later he was appointed Solicitor-General. In 1915 he became a member of the Privy Council and on the reorganization of the Cabinet in 1917, with a coalition membership, he was made Minister of the Interior. He remained in that post until his appointment as Premier. He succeeded Sir

Robert Borden, who resigned on July 10, 1920.

MEIKLEJOHN, ALEXANDER, an American educator, born in Rochdale, England, on Feb. 3, 1872. He came to America at the age of eight and was educated at Brown and Cornell Universities, receiving the degree of Ph. D. from the latter institution. He also holds honorary degrees from various other institutions. After serving successively as instructor, assistant professor, associate professor of philosophy, and dean at Brown University, he became president of Amherst College, Mass., in 1912.

MEILHAC, HENRI (mā-yäk'), a French playwright; born in Paris, France, Feb. 23, 1831. He was trained as an artist and published his first dramatic work in 1855. He subsequently produced a long series of light comedies —some in conjunction with Halévy. Some are well known through Offenbach's music. His best work is "Frou-Frou" (1869). He died in Paris, July 6, 1897.

MEININGEN (mīn'ing-en), the capital of the former German duchy of Saxe-Meiningen, in a narrow valley on the banks of the Werra, 43 miles N. W. of Coburg. The former ducal castle (1682), the most prominent building in the town, contains libraries, a picture gallery, collection of coins, etc. There is a fine English garden here. The town has been in great part rebuilt since 1874, when a fire destroyed the old streets. It was an appendage of the see of Würzburg from 1008 to 1542, and in 1583 came into the hands of the Saxon ducal family. Pop. about 17,000.

MEISSEN (mī'sen), a town in the former kingdom of Saxony, on the left bank of the Elbe, 14 miles N. W. of Dresden. Its chief building is the cathedral (1266-1479), one of the finest Gothic churches in Germany, surmounted by an exquisite spire (263 feet) of open work, and containing many fine brasses. The castle was built in 1471-1483, and in 1710 was converted into the porcelain factory over which Böttger presided. In 1863 the castle was restored, its walls being adorned with frescoes by modern painters, the porcelain factory having been removed in 1860 to other premises; 800 men are employed. Other manufactures are iron, machinery, jute, and cigars. Here is the celebrated school of St. Afra, where Gellert and Lessing were educated. It was founded by Duke Maurice in 1543, and till 1879 occupied the former Afra monastery (built in 1205). Meissen was founded in 928 by Henry I. of Germany, as a stronghold against the Slavonians, and was long the capital of the margraviate and burgraviate of Meissen, which was subsequently merged in the duchy of Saxony. The town was burned down by the Swedes under Banér in 1637. Pop. about 35,000.

MEISSONNIER, JEAN LOUIS ERNEST (mā-so-nyā'), a French painter; born in Lyons, France, Feb. 21, 1815. Among his most celebrated works are: "The Cuirassiers, or 1805"; "Friedland, or 1807"; and "French Country, 1814." All his works were painted with Flemish care and finish, but were, nevertheless, thoroughly original in their treatment. His pictures, though generally of small size, obtained very large sums, and he stood at the head of a crowd of enthusiastic imitators. He was likewise very successful as a designer of book illustrations. The best of these last are the sketches for "Paul and Virginia," Balzac's novels, etc. He died in Paris, Jan. 31, 1891.

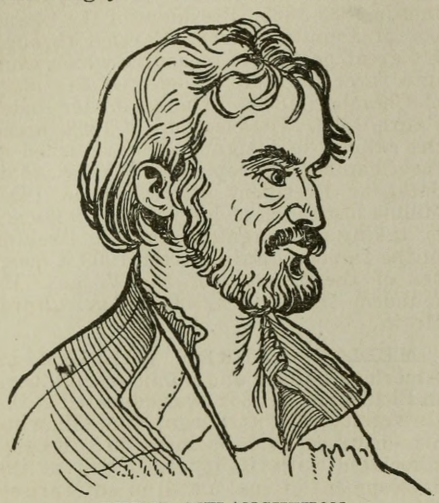
MEISTERSINGERS (mīs-), a society of German citizens formed in the 13th century for the cultivation of poetry. It is believed to have arisen at Mayence, whence it spread to Augsburg, Nuremberg, etc. It was incorporated by Charles IV. in 1378. Among the most famous of them were Hans Sachs, Henry of Meissen, Frauenlob, Regenbogen, Hadlaub, and Muscatblut. The meistersingers were the successors of the minnesingers. Their poems were often satiric, "Reynard the Fox" and "Tyl Owl-glass" are attributed to them.

MEKHONG, or MEKONG (mā-kong'), the greatest river of the Siam peninsula usually identified with the Lan-tsan, which rises in the neighborhood of Chiamdo in Tibet (its exact sources are not known); it pursues a generally S. direction to the China Sea, which it enters by several months in Cochin-China (which country is indeed formed by its deltaic deposits); total length 2,500 miles; but not navigable higher than lat. 14° N., owing to rapids and cliffs which beset its bed in the mountainous regions.

MEKRAN (mek-rän'), a maritime district of southern Asia, forming part of Persia and of Baluchistan; it is mostly arid and barren, but there are fertile tracts along the river valleys yielding excellent dates.

MELANCHTHON, PHILIP, (melangk'thon), a German reformer; born in Bretten, Baden, Feb. 16, 1497. His family name was Schwarzerde, of which

Melanchthon is intended to be the Greek equivalent. He studied at Heidelberg and Tübingen, and in 1518 was appointed Greek professor at Wittenberg, where he became the friend of Luther, and a convert to his doctrines. Luther was at that time Professor of Divinity there. In the following year he took part with Luther



PHILIP MELANCHTHON

in the disputation with Dr. Eck at Leipsic. The Augsburg Confession was drawn up by Melanchthon in 1530, and under the sanction of the Elector of Saxony, he aided in framing a code of ecclesiastical constitutions. He wrote numerous theological treaties, Latin poems, works on history, philosophy, etc., and died in Wittenberg, Germany, April 19, 1560.

MELANESIA (-nē'shiä), a group of islands stretching from the N. E. of New Guinea to the tropic of Capricorn, and including New Britain Archipelago (with the Admiralty Islands), Solomon Islands, Queen Charlotte or Santa Cruz Islands, New Hebrides, New Caledonia, Loyalty Islands, and the Fiji Islands.

MELANITE (mel'an-īt), a black variety of garnet; a lime-iron garnet in which the protoxides are almost wholly lime. Dana includes most of the black garnet in his group, andradite, but excludes that from Arendal, Norway, referring it to the magnesia-alumina garnet group, for which he adopts the name of pyrope.

MELBA, NELLIE (MITCHELL), an Australian prima donna; born in Melbourne, Australia, May 19, 1865; studied under Madame Marchesi in Paris, and made her début in "Rigoletto" at the Théâtre de la Monnaie, Brussels, Oct. 15, 1887; appeared as Lucia, at Covent Garden, London, in 1889; the following year as Ophelia at the Paris Grand Opera, and as Juliet in London. Since then she has sung in all the principal cities of Europe and the United States. She was a member of the Chicago Opera Company 1915-1916.

MELBOURNE (-burn), the capital of Victoria, and the largest city in Australia, on the Yarra-Yarra river, about 9 miles from its mouth in the basin of Port Phillip; lat. 37° 49′ 5″ S., lon. 144° 58′ 35″ E. Melbourne is one of the most important of British colonial ports. Its overseas commerce is exceeded by Sydney. There are many fine public buildings, among them that of the university (with an annual endowment from the state and possessing valuable scholarships and exhibitions, opened in 1855, and with a staff of professors, a considerable attendance of students in arts, laws, engineering, etc.); the post-office, a magnificent structure, in the Italian style, elaborately ornamented with sculpture, and having one of its façades surmounted by four towers, built in 1859; the Parliament House, erected in 1855, at a cost of $2,000,000. Ships drawing 24 feet of water can come up Port Phillip as far as Hobson's Bay, at the mouth of the Yarra-Yarra; but vessels requiring more than 9 feet cannot get over the bars. Though the distance to the bay by the course of the river is 9 miles, it is not quite 2 miles by land, and a railway with an extensive jetty at its lower terminus has been made, connecting with Port Phillip at Sandridge. There is another railway to Williamstown, on the opposite side of Hobson's Bay, which, though considerably longer, has the advantage of better shelter for ships lying at the jetty. A ship railway has been constructed here capable of taking up very large vessels. From the anchorage in Hobson's Bay to the Heads of Port Phillip the distance is about 35 mlies, and the channels are constructed part of the way by sand-banks, which render the assistance of experienced pilots necessary. The basin of Port Phillip, which receives the Yarra-Yarra and other rivers, is a large circular bay or inlet of the sea, whence the colony derived its former name. It has a narrow entrance, not more than 1¾ miles in width, partly occupied with rocks and shoals. The bay is about 40 miles wide from S. to N., and at its greatest extent is about 40 miles long from E. to W. It is said to cover an area of above 800 square miles, and might accommodate all the navies of all the countries in the world. Melbourne was founded in 1837.

In the spring of 1901 the first session of the Parliament of the new Australian Commonwealth was opened here by the Duke of York. It has one of the three mints of the Commonwealth from which, up to 1918, about $700,000,000 of gold coin and bullion have been issued. Melbourne is the second largest port of Australia, the total tonnage of vessels entered in 1916-1917 being more than 5,800,000. Pop. about 600,000; incl. of suburbs about 700,000.

MELBOURNE, W. L., VISCOUNT, an English statesman, born in 1779.

MELCHIZEDEK (-kiz'e-dek) ("King of righteousness"), in the story of Genesis, King of Salem and priest of "Supreme El." He met Abram on his return from the victorious expedition against Chedorlaomer, gave him his blessing, and received tithes from him.

MELEAGER (mel-ē-ā'jur), in classic fable, a chieftain of the Ætolian Calydon, son of Æneas and Altheæ.

MELEAGRIS (-ā'gris), a breed of turkey; a genus of gallinaceous birds of the family *Meleagridæ*, or the sub-family *Meleagrinæ*. They are the largest birds of the order to which they belong. Head naked, with wattles or folds of bright-colored skin, tuft of long hair on the breast, plumage more or less metallic.

MELEGNANO (mel-en-yä'nō), formerly **MARIGNANO** (mä-rēn-yä'nō), a town of northern Italy, 12 miles S. E. of Milan. Here Francis I. of France defeated the Swiss in 1515, and the French routed the Austrian rear-guard in 1859.

MELENARA, Spain, one of three towns having two sets of wireless communications of the Marconi system of the "Compañia Nacional de Telegrafia sin Hilos," holding a government concession. The other two stations are at Cadiz and Teneriffe.

MELES (mē'lēz), the badger; the typical genus of the family *Melidæ*. *M. taxus* (or *vulgaris*) is the largest of the indigenous British mammals. The siffleur of the United States and Canada is *M. labradoricus*, and the Indian badger, *M. collaris*.

MELILLA, a Spanish fortress town on the northern coast of Morocco. Built on a peninsula extending out into the Mediterranean sea, and defended by forts on the land side. In 1902 the port was opened to commerce. Pop. about 40,000.

MELINE, FELIX JULES, a French statesman; born in 1838. After joining the bar he was active as a democrat in opposing the Empire. He declined election during the Commune. In 1872 he was returned to the National Assembly as a conservative Republican. Secretary of Agriculture, 1883-1885. Under Secretary of State a few months under Simon. Secretary of Agriculture, in Ferry's cabinet in 1883-1885. President of the Chamber of Deputies, 1888. Carried through his great protective measures which went into force in 1892. Re-elected President of Chamber, 1894. Prime Minister under Faure, 1896. The elections of 1898 forced the cabinet to resign and he returned to the Chamber of Deputies. Was a candidate for President of France in 1899. Meline lost much of his political influence by taking sides against Captain Dreyfus in the famous affair. After 1903 a member of the Senate for the Vosges. He founded the Society for Agricultural Merit.

MELLON, ANDREW WILLIAM, an American banker and public official, born in Pittsburgh in 1852, was educated at the University of Pittsburgh, and following his entrance into business life, became associated with Henry C. Frick in the development of coal and iron enterprises. He was a director and official in many important industrial and financial institutions. He was a student of finance and a well-known authority on official subjects. He founded the town of Donora, Pa., where he established great steel mills. He became secretary to the treasurer in the Cabinet of President Harding, March 4, 1921.

MELLON INSTITUTE OF INDUSTRIAL RESEARCH, a part of the University of Pittsburgh, but having a separate endowment of its own. Its object is to secure advancement in industrial processes by close co-operation between the practical industry and the workers in science. A person desiring to find some new industrial process gives to the school an amount of money sufficient to pay a chemist or engineer for a year's work, the institution furnishing the facilities for his enterprise. The results for a few years remain the possession of the donor. In 1918 more than fifty research workers were studying work given them by patrons of the institute.

MELO, capital of the department of Cerro Largo, Uruguay, 200 miles N. E. of Montevideo. Center of a region in which cattle raising is the chief industry. Pop. about 10,000.

MELODEON, a wind instrument with a row of reeds and operated by keys. In 1846 a method of drawing air through

the reeds by suction bellows was patented. Pressure on the key drives down the pin and the valve, allowing passage to the air. The principle is the same as that of the accordeon.

MELODRAMA, originally a dramatic piece in which the interest was heightened by the character of the vocal or instrumental music accompanying certain situations. The melodrama is of French invention; the subjects are generally of a romantic character, illustrated with picturesque costumes and scenery, and having serious and sensational incidents.

MELODY, an agreeable succession of simple sounds, produced by a single voice or instrument, and so regulated as to give a pleasing effect or to be expressive of some kind of sentiment. It is often founded on relative harmonies and yet is completely distinguished from harmony by not needing the addition of parts to make it perfect.

MELOE (mel'ō-ē), oil beetle; the typical genus of the family *Meloïdæ*. One or two species are common on hedgebanks in spring. Wing cases short, color blue-black, abdomen full, and general appearance greasy. The eggs are laid in holes in the ground, and the larvæ when hatched attach themselves to bees of various species, whence their popular name bee lice. The active six-footed larva changes into a fleshy cylindrical grub with less aborted legs and stronger jaws than the corresponding stage of Sitaris.

MELON, in botany, *Cucumis melo*. Linnæus, who discriminated it from others of the genus by the angular points of the leaves being rounded off and its torulose, i. e., knotted, fruit, says that it is a native of the Kalmuck country (in Tartary).

MELOS (mē'los) (Italian Milo), a Greek island, the most S. W. of the Cyclades; length 13 miles, width 8 miles. The island is volcanic, and produces sulphur, salt, pumice stone, stucco, millstones, and a little oil and wine. Among the ruins of the ancient city of Melos, and near its theater, was found the priceless antique, the Venus de Milo, now one of the chief treasures of the Louvre. Pop. about 5,000.

MELPOMENE (mel-pom'e-nē), one of the nine muses who presided over tragedy. She is represented as having the form and face of a woman still young, with a commanding mien, and richly dressed. On her feet are the cothurnus; in one hand she holds a poniard and in the other a tragic mask.

MELROSE, a city of Middlesex co., Mass., 7 miles N. of Boston, on the Boston and Maine railroad, made up by villages of Melrose Highlands, Fells, and Wyoming. Has manufactures of boots, shoes, and rubber goods and is governed by mayor and board of aldermen. Pop. (1910) 15,715; (1920) 18,204.

MELROSE, a village of Scotland, county of Roxburgh; on the Tweed, 31 miles S. E. of Edinburgh. Melrose Abbey, originally founded by David I., in 1136, was destroyed by Edward II. of England in 1322. In 1336 it was rebuilt by Robert Bruce, and completed in the reign of James IV., about 1488-1513. It was again destroyed by the English in 1545.

MELTING POINT, that point of the thermometer at which a substance becomes fused.

MELTON-MOWBRAY, a town of Leicestershire, England, in the center of a great hunting district; on the Eye river near its junction with the Wreak, 104 miles N. N. W. of London; it has a fine cruciform church, mainly Early English; and is famous for its manufactures of pork pies and Stilton cheese. Near the town in February, 1644, a severe engagement took place between parties of royalist and parliamentary troops, resulting in the defeat of the latter; and among its natives have been Archbishop de Melton, who lies buried in the church, and "Orator" Henley.

MELVILLE, one of the Parry Islands, a sound, and a peninsula in the polar regions of North America. The island is crossed by lat. 75° N. and long. 110° W., and is separated on the W. by Fitzwilliam Strait from Prince Patrick Island; greatest length, 200 miles; greatest breadth, 130 miles. In 1819 Parry, who gave the island its name, passed the winter here with his crews. The sound, about 250 miles long by 200 broad, extends S. E. of the island, and communicates with the Arctic Ocean on the W. by Banks Strait, and with Baffin Bay on the E. by Barrow Strait and Lancaster Sound. The peninsula projects from the continent at its N. E. corner, and has on the N. the Fury and Hecla Strait, and on the E. Fox Channel. It is 250 miles in length by about 100 in average breadth.

MELVILLE, ANDREW, a Scotch reformer; born in Baldovie, Forfarshire, Scotland, Aug. 1, 1545. After completing his education at St. Andrew's University, he was appointed, in 1574, principal of Glasgow College, and took a leading part in the establishment of Pres-

byterianism in Scotland. In 1582, being then the principal of St. Mary's College, St. Andrew's, Melville was the first to sign the well-known Remonstrance of the Presbyterian clergy against the royal policy in ecclesiastical affairs. He was then summoned before the Privy Council on a charge of treason, and sentenced to imprisonment. He evaded the latter, however, by escaping into England, returning to Scotland, eventually, in 1585. In 1595, Melville was elected Lord Rector of St. Andrew's University. Expatriated to France for political offenses, Melville was made Professor of Theology at the University of Sedan. He died in Sedan, France, in 1622.

MELVILLE, GEORGE WALLACE, an American naval officer; born in New York City, Jan. 10, 1841. He entered the United States navy in 1861, rising through the various grades to that of Chief of the Bureau of Steam Engineering. He accompanied the unfortunate "Jeannette" polar expedition in 1878; also that of the Hall relief expedition in the United States steamer "Tigress"; also the Greely relief expedition in 1884. In the "Jeannette" expedition he underwent the severest sufferings and hardships, but reached Irkutsk in safety. He became a rear-admiral in 1899, and retired in 1903. He died March, 17, 1912.

MELVILLE, HERMAN, an American author; born in New York, Aug. 1, 1819. Going to sea as a cabin boy, he spent a number of years in travel. His most famous books were "Typee" (1846), and "Omoo" (1847), narrating his adventures in the Marquesas Islands; others were "White Jacket" (1850), "Moby Dick" (1851), and a number of other stories, and three volumes of poems. He died in New York, Sept. 28, 1891.

MEMBRANE, an expansion of any tissues in a thin and wide layer. Bichat divides them into serous, mucous, and fibrous membranes. Among the most important membranes in the body are those of the brain: viz., the dura mater, the arachnoid, the pia mater and the falx.

Undulating membranes, simple membranous bands, one margin only of which is attached, the other being free and exhibiting an undulatory motion. They are allied to and answer the same purpose as cilia. They are stated to occur on the spermatozoa of salamanders and tritons, and in the water vessels of some Annelids, Infusoria, and Rotatoria.

MEMEL (mā'mel), a Prussian seaport, defended by a citadel and two forts on the sea side; at the N. extremity of the Kurisches Haff, at its opening into the Baltic, 70 miles N. N. E. of Danzig; has a large harbor, and exports from Lithuania and Russia timber, flax and linseed, coal, manure, grain, and herrings; has also manufactories of brandy, soap and chemicals, sawmills, iron foundries, breweries, and shipbuilding yards. Memel was founded in 1252 by the Livonian order, who gave it to the Teutonic Knights, by whom it was fortified in 1404. It suffered severely in the Lithuanian wars (13th to 15th centuries). Here in 1807 Frederick-William III. of Prussia took refuge, and a treaty with England was signed. Having been almost wholly destroyed by fire in 1854, it was rebuilt in modern style. The city was captured by the Russians in 1914, but the German armies soon regained it and retained possession. Pop. about 25,000.

MEMNON, in Greek mythology, a son of Eos (the morning) and Tithonis (= Titan, a name for the sun), represented in the legend as a son of Laomedon and brother of Priam. The famous statue called by the Greeks Memmon, in the sepulchral quarter of Thebes called Memnoneia, possessed the real or imaginary property of emitting a sound like that of a harp at the rising of the sun.

MEMORY, the mental faculty or power which causes the impressions of bygone events, at ordinary times latent in the mind, to affect it anew or to be reproduced by an effort for the purpose. The art which furnishes aid to memory is called MNEMONICS (*q. v.*).

In physiology, memory is the property of the cerebral organs only, not of the organ of sense, and is never entirely lost except through disease or accident. It depends entirely on association, and is one of the first faculties aroused in the infant mind, traces of it also occurring in the lower animals.

MEMPHIS, a celebrated city of Egypt, on the W. bank of the Nile, 10 miles S. of the modern city of Cairo. Herodotus ascribes the foundation of this place, the Moph of the Old Testament, to Menes, first king of Egypt; the dates have been assigned from 3892 B. C. to 2100 B. C. Memphis was taken by the Persians under Cambyses 525 B. C., when many of its temples and palaces were destroyed. Alexander III. (the Great), who wintered here 332 B. C., did it much injury by founding Alexandria. Memphis, made capital 272 B. C., was taken by Antiochus Epiphanes 171 B. C., and was visited and restored by Septimius Severus, in 202. In the 7th century it passed under the dominion of the Arabs, and gradually fell into decay, Cairo being built from its

ruins. The Arabian traveler, Abd-al-latif, visited it in the 12th century. The ruins were discovered and excavated by Mariette, between 1850 and 1854. The position of Memphis was such as to command the whole inland trade of Egypt, ascending or descending the Nile; it was the chief seat of learning and religion in Egypt. It ceased to be the metropolis of Egypt on the foundation of Alexandria, 332 B. C. It soon after fell into such obscurity and decay, that, till lately, even its site was disputed.

MEMPHIS, a city and county-seat of Shelby co., Tenn.; on the Mississippi river and many important railroads. It contains a custom house, cotton exchange, merchants' exchange, the Cossitt Public Library, University School, Christian Brothers' College, the Memphis Hospital Medical College, St. Mary's School, Memphis Institute, Leath High School, Higbee School, the Le Moyne School, and the Hannibal Medical College. There are electric street railroads, gas and electric lights, waterworks, a steel railroad bridge across the Mississippi, built at a cost of $3,000,000, and opened in 1892, several ferries, National, State, and savings banks, and many daily, weekly, and other periodicals. The city is one of the largest trade centers for cotton in the United States. The total value of the receipts of cotton in 1919 was $77,509,347, and the value of the export of cotton and cotton-seed products was $42,000,000. It has also large manufacturing interests, including cotton-seed oil, flour, grist, and planing mills, foundries and machine shops, carriage and wagon works, brick and tile plants, tobacco factories, etc. The assessed value of real estate in 1919 was $96,921,590, of personal property $13,195,297. The tax rate was $17.50 per $1,000. The cost of maintaining the government was $4,211,617. There were 22,261 pupils in the public schools, and the expenditures for education were $738,960. In 1862 a naval battle was fought here, resulting in victory for the Union vessels, and the city was occupied by the National authorities till the close of the war. Pop. (1910) 131,105; (1920) 162,351.

MENAHEM (men'-), the 16th King of Israel, previously general of the army of Zachariah. He reigned in Samaria 10 years, 771-760 B. C., and was a tyrannical and cruel idolater.

MENAM (mā-näm'), the chief river of Siam, rising in the Laos country, and flowing generally S. to enter the Gulf of Siam below Bangkok; length, about 900 miles.

MENANDER (-nan'dur), one of the most celebrated of the Greek comic poets; born in Athens in 342 B. C. He composed 108 comedies; but there are only a few fragments remaining of them. Menander was the disciple of Theophrastus, and, like him, excelled in the delineation of character. He was also the friend of Epicurus, whose philosophy he adopted. He is said to have drowned himself 291 B. C. on account of the success of his rival Philemon.

MENASHA, a city of Winnebago co., Wis., 14 miles N. E. of Oshkosh, on Lake Winnebago, Chicago and Northwestern and other railroads. Is much frequented by visitors in summer. Has woolen mills, foundry, paper, woodenware, blinds, and cigar factories. City governed by mayor and council. Pop. (1910) 6,081; (1920) 7,214.

MENCIUS (men'shi-us), Latinized from **MENGTSE** (meng-tse'), a Chinese philosopher; born in Tsow-hien, in 372 B. C. He was a follower of Confucius, whose influence he revived. Twenty-nine years he spent in traveling about China preaching, but with small success; his last 15 years were passed with his disciples in retirement. His sayings are contained in the last of the Chinese "Four Books." He died about 289 B. C.

MENDELEEF, DMITRI IVANOVITCH (men-del-ē'ef), a Russian chemist; born in Tobolsk, Siberia, Feb. 7, 1834. He studied at St. Petersburg, and, after having taught at Simferopol, Odessa, and St. Petersburg, became Professor of Chemistry in the University of St. Petersburg in 1866. He enriched every section of chemical science, but is especially distinguished for his contributions to physical chemistry and chemical philosophy. He died in 1907.

MENDELISM, a theory of heredity discovered and announced in 1865 by Gregor Mendel. His conclusions were the result of experimentation with plants, and the theory relates, in general, to the effects caused by successive crossing of hybrids. The general conclusion is that when two characters are mutually exclusive, one of them is always "dominant" over the other, which is said to be "recessive."

MENDELSSOHN, MOSES (men'delszōn), a German-Jewish philosopher; born in Dessau, Germany, Sept. 6, 1729. He was bred to merchandise, but devoted himself to literature, in which he acquired a distinguished reputation. In 1742 he settled at Berlin. In 1755, he published his first piece, entitled "Pope a

Metaphysician"; it was written in conjunction with Lessing. His best known work is the "Phædon," a discourse on the immortality of the soul. He also wrote "Letters on the Perceptions"; "Morning Hours"; "Jerusalem"; etc. He died in Berlin, Prussia, Jan. 4, 1786.

MENDELSSOHN-BARTHOLDY, FELIX (-bär-tōl'dē), a German composer; born in Hamburg, Feb. 3, 1809. He was the son of a rich banker, and the grandson of the above philosopher. His incredible facility in playing music at sight, ex-



FELIX MENDELSSOHN-BARTHOLDY

cited the wonder of his teachers—Zelter and Berger. In his ninth year he performed at a public concert in Berlin, to the admiration of his audience. The following year the boy artist accompanied his parents to Paris; and when he was 12 years old, he composed his pianoforte quartette in C minor. His first compositions were published in 1824. These were soon followed by many others. Three years afterward he made a musical tour through Italy, France, and England; and gave, in London, his first symphony, and his overture to the "Midsummer Night's Dream." In 1833, he was appointed to the directorship of the concerts and theater of Düsseldorf, where, in 1835, he produced his great oratorio of "Paulus"; and 10 years afterward he accepted the same office at Leipsic. His symphonies are ranked only second to those of Haydn, Mozart, and Beethoven. He died in Leipsic, Nov. 4, 1847.

MENDÈS, CATULLE (mo*ng*-des'), a French writer; born in Bordeaux, France, May 22, 1843. His verse is marked by extreme devotion to form; his style has been called the cameo-art in literature. The collection entitled "Poesies" appeared in 1878. In prose he wrote: "Love's Follies" (1877); "Parisian Monsters" (1882); "To Read at the Bath" (1884); "Grande-Maguet" (1888); etc.; the dramas "Captain Fracasse" (1870); "Fiamette" (1889); etc. He died Feb. 8, 1909.

MENDICANT ORDERS, monastic organizations, which, by their rule, were forbidden to acquire landed property in any manner whatsover, but were compelled to subsist on alms, in many instances in their early history, and in some cases even now, in some countries under Roman obedience, actually gathered by begging. They date from the 13th century, and at first consisted of the Carmelites, the Dominicans, and the Franciscans. In the latter half of the century the Augustinians became a mendicant order, and the Servites were recognized by Pope Innocent VIII., in 1487, as a fifth mendicant order.

MENDIP HILLS, a range in Somersetshire, England, extending 23 miles S. E. from Weston-super-Mare to Shepton Mallet, and 3 to 6 miles in breadth. The highest point is Black Down (1,067 feet). The limestone of the Mendips is pierced by numerous caverns, some of which have yielded prehistoric remains; and lead mining, now much decreased in importance, has been carried on from pre-Roman days, calamine mining being a later industry.

MENDOZA (-dō'thä), a W. department of the Argentine Republic; area, 56,000 square miles; pop. about 200,000. The Andes occupy the W. portion. Aconcagua (22,427 feet), the highest peak in America, being on the N. W. frontier; the rest of the province is pampa land, fertile wherever it can be irrigated by the waters of the Mendoza and other streams, but elsewhere almost worthless. Minerals, especially copper, abound, petroleum and coal also have been found; and a large quantity of wine is exported to the other provinces. Capital MENDOZA, 650 miles by rail W. by N. of Buenos Ayres, on the transcontinental railway; it is a handsome town; lying among vineyards and gardens, 2,320 feet above the sea; its streets have shade trees and streams of

running water, and the Alameda is the most beautiful on the continent; an active trade is carried on with Chile. An earthquake in 1861 destroyed Mendoza (founded 1559) and 13,000 of its 14,600 inhabitants; many of the ruins are still visible in the larger city, which has been raised on its site. Pop. about 60,000.

MENE, he is numbered; TEKEL, he is weighed; UPHARSIN, and they are divided, the Chaldee words supernaturally traced on the wall at Belshazzar's impious feast, and significant of his impending doom (Dan. v.). The astrologers could not read them, perhaps because they were written in antique Hebrew characters; still less could they explain, even if they had dared to do so. Daniel, however, received skill to understand, and courage to declare their awful meaning; and the same night witnessed their fulfillment.

MENELAUS (men-e-lā'us), in Greek legend, one of the Greek heroes, a King of Sparta, brother of Agamemnon, and the unfortunate husband of the lovely but faithless Helen, whose flight with Paris, the youthful envoy from Priam, led to the Trojan war. In the "Iliad" he fights a duel with Paris and does many brave deeds, including the bearing of the body of Patroclus from the battlefield. In the 10th year of the Trojan war, Helen, by perfidiously introducing Menelaus into the chamber of Deiphobus, obtained his forgiveness and she returned with him to Sparta, after a voyage of eight years. He died some time after his return.

MENELEK, or **MENELIK, II.**, King or Negus of Abyssinia; son of Hailo Menelek, King of Shoa; born in 1842; succeeded Johannes II. in 1889, and was crowned in 1890. He was of Negro blood with a strain of Jew, Arab and Galla and claimed descent from Solomon and the Queen of Sheba. Menelek united the territories of many lesser chiefs, whom he kept tributary by force and by virtue of the new feudal system, which he substituted for the old feudalism. He was charged with depending, secretly, on the slave trade for the larger part of his revenue. He had considerable intelligence and attempted to keep in touch with European affairs. At the battle of Adowa, in the spring of 1896, his troops inflicted an overwhelming defeat on the Italian army, thus securing the independence of his territories. He practically ceased to rule in 1910, and died in 1913. He was succeeded by his grandson Lidj Jeassu. The latter was deposed in 1916 and was succeeded by his aunt Waizeru Zauditi. See ABYSSINIA.

MENES (mē'nēz), the conductor, the first king of the first Egyptian dynasty, who built Memphis, made foreign conquests, introduced luxury, and was devoured by a hippopotamus. His name marks a great chronological epoch, being placed by chronologists 3643, 3892 B. C., or even 5702 B. C. Stricter chronologists make his accession 2717 B. C.

MENHADEN (-hā'-) (Indian name), *Alosa Menhaden*, one of the Clupeidæ, abounding in the waters of New England and as far S. as Chesapeake Bay. It is also called bony-fish, white-fish, hardhead, moss-bunker, and pauhagen. In Massachusetts and Rhode Island they are known by their native name; in New York as moss-bunkers and skippaugs.

MENINGITIS (-jī'tis), the term applied generally to the inflammation of the membranes enveloping the brain. Acute simple meningitis as a rule involves the membranes extensively, but is more marked over the convexity of the cerebral hemisphere than at the base or any localized spot. The premonitory symptoms are usually well marked, as headache, gradually getting worse, heaviness, giddiness, irritability, and frequently sickness and vomiting. When the disease is established, it presents the following stages: (1) Excitement; (2) Transition; (3) Depression. The extent of the inflammation and its position on the brain determine the symptoms. There are acute and chronic forms of the malady. Cerebral meningitis, rare in acute form, is due to injuries, sunstroke, alcoholism and is very dangerous. Acute tubercular meningitis is due to inflammation of pia mater caused by deposit of miliary granules in the surface. Spinal meningitis is uncommon, due to injuries and generally fatal. Epidemic cerebro-spinal meningitis, or spotted fever due to a special organism. How transmitted is unknown. The use of a serum first obtained from the monkey, but now from the horse, has reduced mortality 30 per cent. except in chronic cases.

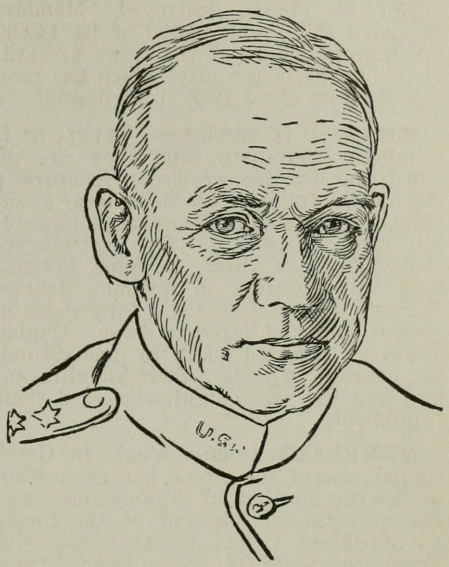
MENNONITES (men'non-īts), the followers of Menno Simons (1492-1559), a priest at Witmarsum, in Friesland, who resigned his position from religious convictions. His teaching was ascetic rather than dogmatic, except that he was anti-pædobaptist. The discipline of the Mennonites involved separation from the world, to the extent of refusing to bear arms or to fill any civil office. There was no hierarchy, but exhorters were chosen by the congregations, each of which was independent of all the rest, and from these exhorters elders were selected to

administer the sacraments. The Mennonites spread over Switzerland, Germany, Holland, and even to France. Their chief home now is in the United States and Canada. There are also some German Mennonite colonies in southern Russia. The Mennonites in the United States are divided into seven branches, as follows: Mennonite (proper), Amish, Reformed, General Conference, Bundes Conference, Defenseless, and Brethren In Christ, of which the Mennonite proper, the Amish, and the General Conference are the most numerous. In all branches there are about 60,000 communicants, 1,400 ministers, and 735 churches.

MENOBRANCHUS (-brang'kus), a genus of tailed amphibians, of the family Proteidæ.

MENOCAL, MARIA GARCIA, President of Cuba from 1912. He graduated from Cornell University in 1890 as a civil engineer, which has been his work nearly all of his lifetime. During the years of the Cuban revolt against Spain, 1895-1898, he served in the Cuban army, but upon the conclusion of peace returned to civil life and became the managing director of the Cuban-American Sugar Company. In 1912 he was elected President on the Conservative ticket. One of the main desires and purposes of his administration has been to maintain very close and friendly relations with the United States. This policy, together with the fact that he was allied with the big business men of the island, brought considerable opposition from the Liberal party. His election for the second term was marked by considerable disorder, and the United States warned the Liberal leaders of its intention to intervene if the riots continued. When the United States entered the war against Germany Menocal showed his friendship by advocating similar action to the Cuban Congress.

MENOHER, CHARLES THOMAS, soldier and administrator; born in Pennsylvania in 1862, graduated from the U. S. Military College in 1886, and joined the Army War College in 1907. He was aid-de-camp to Brigadier-General E. B. Williston, U. S. Volunteers, in 1898, and was at Havana, Cuba, 1898-1899. During 1901-1903 he commanded the 28th Battery, Field Artillery (Mountain), and was on duty with the General Staff from 1903 to 1907. In 1907 he became provost-marshal and assistant to chief of staff, Army of Cuban Pacification. He was made lieutenant-colonel in 1911, and three years later was assigned to the Third Field Artillery. He was colonel in 1916, and when the United States declared war served with the American Expeditionary Forces in France, being



GENERAL CHARLES T. MENOHER

made brigadier-general Aug. 5, 1917, and major-general Dec. 1, 1917.

MENOMINEE (-nom'-), a city and county-seat of Menominee co., Mich.; on Green Bay, at the mouth of the Menominee river, and on the Chicago, Milwaukee, and St. Paul, the Chicago and Northwestern and the Wisconsin and Michigan railroads; 52 miles N. E. of Green Bay. It is among the largest lumber shipping ports in the world. It contains Menominee County Agricultural College, a high school, public library, hospital, National banks, electric lights, and several daily and weekly newspapers. It has a great variety of manufacturing industries, including shoes, paper, steel works, etc. Pop. (1910) 10,507; (1920) 8,907.

MENOMONIE, a city and county-seat of Dunn co., Wis.; on the Red Cedar river, and on the Chicago, St. Paul, Minneapolis, and Omaha, and the Chicago, Milwaukee, and St. Paul railroads; 64 miles S. E. of St. Paul, Minn. There are the Stout Manual Training School, the Mabel Tainter Memorial Library, County Asylum for Chronic Patients, waterworks, electric light plant, National and State banks, and several newspapers. It has industries in lumber, brick, flour, gasoline engines, cigars, etc. Pop. (1910) 5,036; (1920) 5,104.

MENOPOME (men'ō-pōm), *Protonopsis horrida*, a large North American amphibian in the Salamander order. It is widely distributed in the rivers of the Mississippi basin, and is well known as the "hellbender," "alligator," "water-dog," etc., names which suggest its fierce characteristics. It resembles the salamander in form, has four well-developed limbs, and a persistent gill-aperture. It attains a length of 18 inches to 2 feet, and has extraordinary powers of voracity and vitality.

MENSA, or **MONS** (monz) **MENSA**, one of the 14 constellations which Lacaille added to the heavens in connection with his work at the Cape of Good Hope. It is named from the mountain which is a conspicuous feature of the landscape at the Cape. The constellation is a very inconspicuous one near the South Pole, its brightest star being only of 5.3 magnitude. It is surrounded by Octans, Hydrus, Dorado, Volans, and Chamæleon.

MENSTRUATION, a sanguineous flow from the lining membrane of the uterus, regularly returning once a month. It generally begins about the 15th year, indicating pubescence, and terminates about the 45th. It is sometimes prolonged, but cases are rare in which women above 50 years have borne children. There is, as a rule, no menstrual flow during pregnancy and lactation. The diseases incidental to the woman as a result of menstruation are numerous, the chief being menorrhagia and dysmenorrhœa. A similar flow of blood from the lining membrane of the uterus of oviparous animals. It generally recurs once a year, usually in the spring, though in the case of some animals from two to six times. In those that have undergone a change by domestication, as dogs and cats, the recurrence is usually irregular, depending upon various circumstances, as diet, temperature, etc.

MENSURATION, that branch of applied geometry which gives the rules for finding the lengths of lines, the areas of surfaces, and the volumes of solids. In medicine the term denotes a means for exploring the state of the thoracic and other cavities.

MENTAL DEFECTIVES. See INSANITY.

MENTAL SCIENCE, or **PSYCHOLOGY** is the science of the mind. The science of the mind is the Latin equivalent for the word, of Greek derivation, psychology. Both are concerned with what is called the spiritual, or non-material, part of the human personality.

The great advancement made, since Aristotle, in psychology is found in the laboratory. For the present purpose, it is fitting to refer to the apparatus of such a laboratory in the most general way. The instruments for research, and for measuring the methods and results of research, are numbered by the scores. Among the more important of them are the tambour, an instrument designed to record movements upon smoked surfaces; the plethysmograph, designed to record the changes in the volume of blood in the arm; the pneumograph, designed to record the breathing movements; and there are also similar instruments for recording movements of the head and of the fingers. In fact, the instruments of the psychological laboratory apply to all senses and to the entire intellectual operations.

Mental science, or psychology, whether connected or unconnected with the laboratory, is divided into several branches. Chief among them are what is known as genetic, structural, and functional psychology.

Genetic psychology is concerned with the origin and development of the mind. The chief question in this branch is whether the differentiation in the mental processes is quantitative or whether it is qualitative. For instance, does the thinking or the consciousness of the dog differ in degree or in kind from the thinking or consciousness of man? Under this head also such questions as instinct, habit, and the rate of mental development, are of primary importance.

A second branch of the subject is known as structural psychology, which refers to the mind as a force in and of itself; and functional psychology, a third branch, refers to the operation of this force. The two terms, structural and functional, have the same relation, applied to psychology, that they possess when applied to physiology or anatomy.

One of the most important applications of modern psychology refers to measurements. These measurements are at once direct and indirect. Direct, they have close relationship to the laboratory, and, in particular, to the measurements of the reactions to light and to sound. Indirect measurement still continues certain forces and conditions of the laboratory, but enlarges the tests unto the use, for instance, of the memory, unto the origin and progress of mental fatigue, and unto certain muscular movements. The element of attention, of association of ideas, of correlation of facts, represent a field in which measurements, both as causes and as results, fill important functions.

Psychology, as a branch of American education, is a development of the last fifty years. It has found its place in the high school and academy, as well as in the college and university. In the secondary schools, a science so complex has, and should have, an insignificant place. In normal schools, as a part of the process of training teachers, it holds a significant relationship as is shown in the article on Pedagogy. The proper field for psychology, however, is in the college or university. This field is at first cultivated by simple courses, largely experimental. It continues in the experimental development, and, presently, takes up such questions as comparative psychology, mental development in the individual, and also animal behavior, important in itself and also important in comparison with the mental development of man. In certain universities, the comparative element is made to apply to the evolution of different races and of race, as well as of individuals. The psychology also of the primary elements of truth, beauty, morality, and religion, are considered. In the laboratory special emphasis is placed upon research. Research is used as a basis for work for advanced degrees, as well as for its own sake. It is recognized that the field for special investigation is as limitless and diverse as are the conditions of the human mind.

Mental science, or psychology, in its further application has two special relationships, pathological and educational. On the pathological side, it represents a most important part of medical education wherein it has taken on the name of psychiatry. Courses in psychiatry are now being rapidly established in American medical schools. This department is, if possible, connected with a hospital for the treatment of mental diseases. A great therapeutical development in this field is to be expected in the next years and decades. On the educational side, mental science is closely related to the whole pedagogical process. The understanding of the mind that is to be informed and disciplined is of primary consequence. Psychology represents the method for securing such understanding. At this point, the temptation is to accept superficiality in method and ineffectiveness in result.

Mental science, as interpreted and applied in America, is in debt to the teachers and scholars of the German university, and especially to the great Wundt. The present disregard of German educational power of the past should not blind Americans to the great work which Wundt, and his associates, did in this field. In America, of many names, that of William James is perhaps chief. James (1842 to 1910), of diverse education—at Geneva, Switzerland, Lawrence Scientific School and the Medical School of Harvard University, Berlin, and a student of Louis Agassiz, he brought to his writing, teaching and research, a great mind educated in many fields and through great masters. His writings represent the best intellectual gifts brought to a high degree of development. His books have been translated into Russian and Japanese, as well as into Spanish, Italian, German, and French. He was a humanist, as well as psychologist and philosopher. Undoubtedly he ranks with Jonathan Edwards as the most influential mind, in philosophical thought, which America has produced.

In addition to James should be named Edward B. Titchener of Cornell University, George Trumbull Ladd of Yale University, James R. Angell of Chicago University, and G. Stanley Hall of Clark University. For a time Professor H. Münsterberg of Harvard occupied a commanding place.

MENTANA (-tä'nä), a small village, 12 miles N. E. of Rome, where Nov. 3, 1867, the Garibaldians were defeated by the Papal and French troops.

MENTHOL, a white crystalline substance obtained from oil of peppermint, and considered a valuable remedy in neuralgic affections of the face and head. The crystals are partially soluble in water, but entirely so in ether and the fixed and volatile oils.

MENTONE (-tō'ne) (French Menton), a town in the department of Alpes Maritimes, France, pleasantly situated on the Mediterranean, 1½ miles from the Italian frontier and 14 miles N. E. of Nice. Owing to its S. exposure, and the fact that spurs of the Alps shelter it on the N. and W., it enjoys a delightful climate (average for the year 61°) and so has become a favorite winter resort of invalids and health seekers from England, Germany, and other countries. The town stands on a promontory that divides its bay into two portions; the native town clings to the mountain side, while the hotels and villas for the visitors extend along the water's edge. The harbor is protected on the S. and W. by a sea-wall. Great damage was done to the place by an earthquake in February, 1887. In the 14th century it was purchased by the lords of Monaco, and, except during the period of the revolution and down to 1815, when France seized it, the princes of Monaco kept possession till 1848. In

that year the inhabitants voluntarily put themselves under the protection of Sardinia, but that power yielded the town to France 12 years later. Pop. about 18,000.

MENTOR, in Greek legend, the faithful friend of Ulysses, who intrusted to him the care of his domestic affairs during his absence in the war against Troy. The education of the young Telemachus fell to his charge, and the wise and prudent counsel which he gave the youth has given to his name its metaphorical significance.

MENU, or **MANU**, an Indian writer.

MENZALEH (-zä'le), **LAKE**, a coast lagoon of Egypt, extending E. from the Damietta branch of the Nile, and separated from the Mediterranean by a narrow strip of land, with several openings. Its surface, 460 square miles in extent, is studded with islands, the most interesting of which is Tennees, the ancient Tennesus, with Roman remains of baths, tombs, etc. Its waters are full of fish, and its shores abound in wild fowl. The Suez Canal passes through the E. portion. The lake has an average depth of not more than three feet, except when the Nile, mouths of whose delta reach it, is in flood; and it is being gradually drained.

MENZEL, ADOLF VON (ment'sel), a German artist; born in Breslau, Prussia, Dec. 8, 1815. He is best known for his drawings and oil paintings illustrative of the times of Frederick the Great and William I., emperor—pictures characterized by historical fidelity, strong realistic conception, originality, and humor. His "Adam and Eve," "Christ among the Doctors," and "Christ Expelling the Moneychangers" are also notable pictures. He died Feb. 9, 1905.

MEPHISTOPHELES (mef-is-tof'uh-lēz), the name of one of the best-known personifications of the principle of evil. The word has been very variously explained, but is probably of Hebrew origin, like most names of devils in the history of magic, confounded with, and approximated in form to, the Greek, μηφωστοφίλης "one who loves not light." Mephistopheles owes all his modern vitality to Goethe's "Faust."

MERCANTILE LAW, that department of law which pertains to or is characteristic of commercial transactions. See LAW.

MERCATOR, GERARD (mer-kä'tor), a Flemish mathematician and geographer; born in Rupelmonde, Belgium, Mar. 5, 1512. He is distinguished especially for the method of laying down charts and maps which goes by his name. He died in Duisburg, Prussia, Dec. 2, 1594.

MERCATOR'S CHART, or **PROJECTION**, a mode of projection or representation of a portion of the surface of the earth on a plane, in which the meridians are represented by equi-distant parallel straight lines, and the parallels of latitude by straight lines perpendicular to them. This chart is particularly adapted to the purposes of navigation, inasmuch as the plot of a ship's course, or a rhumb line between two points upon it, is represented by a straight line. On this account, as well as on account of the facilities which it affords for making calculations necessary in navigation, Mercator's chart is now almost universally adopted for sailing purposes.

MERCEDES, a town in Argentina, 36 miles from Buenos Ayres. Situated in the midst of a great sheep-raising section; it is a flourishing town of the province of Buenos Ayres. Pop. about 50,000.

MERCEDES, capital of department of Soriano, Uruguay, on Rio Negro, 150 miles N. W. of Montevideo. Is a great resort for visitors and invalids. Has large trade in wool and cattle products. Pop. about 16,000.

MERCERIZED COTTON, the name applied to cotton fabrics after they have been subjected to a chemical process which gives to them a silky luster which remains permanent. The process was invented by John Mercer, an English chemist, in 1844, and it has been successively improved by others. The agents used are caustic soda or caustic potash, and the mercerizing is performed by machinery. By treatment with acids it is possible to give to the fabrics all the external qualities of silk.

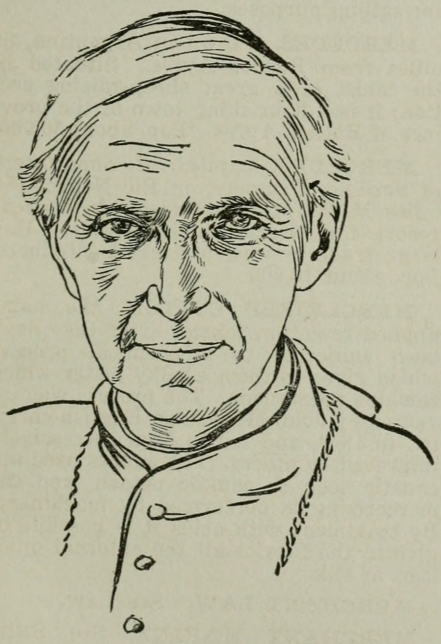
MERCHANT LAW. See LAW.

MERCHANT MARINE. See SHIPPING.

MERCIA (mur'shiä), the great Anglian kingdom of central England. The name, originally limited to the district around Tamworth and Lichfield and the Upper Trent valley, refers to a "march" or frontier that had to be defended against hostile Welshmen. The first settlements were most probably made in the second half of the 6th century, but Mercia first rose into real importance, and indeed grew into middle England, under the vigorous rule of Penda (626-655). His nephew, Wulfhere (659-675), pushed back the Northumbrians, and extended the

boundary S. to the Thames, and Ethelbald (716-755) spread his conquests round all the neighboring states. But the mightiest kings of Mercia were Offa (757-795) and Cenwulf (796-819), and after their time its power rapidly declined before the invasions of the Danes on the one side, and the spread of the West Saxon kingdom on the other. At length it became one of the great earldoms, and Elfgar, Leofric, Edwin, and Morcar retained at least the shadow of past power.

MERCIER, DESIRÉ JOSEPH, Cardinal; born Nov. 22, 1851, at Braine l'Alleud, Belgium. After studying at St. Rombaud's College, Malines, was raised to the priesthood in 1874. Appointed to the chair of Philosophy of the Seminary of Malines in 1877. In 1886 Pope Leo



CARDINAL MERCIER

XIII. appointed him a domestic prelate. He was next appointed to the chair of Neo-Scholastic Philosophy at the University of Louvain, where in a few years he built up the world-known "Higher Institute of Philosophy." Made cardinal, Feb. 21, 1906. During the German occupation of Belgium in the World War 1914-1918, Mercier stood firmly for the rights of his oppressed countrymen, maintaining a correct, but uncompromising attitude toward the conquerors. His indomitable courage was effective in maintaining unshaken the patriotic spirit of the people of Belgium. His pastoral letter on "Patriotism and Endurance," distributed in spite of German opposition (Christmas, 1914), gained a world-wide fame and is regarded as one of the greatest utterances of the World War. Cardinal Mercier visited America in 1919 to express his gratitude for American services to Belgium in the war and was everywhere received with enthusiasm.

MERCURIC CHLORIDE (Corrosive sublimate; Mercury bichloride) $HgCl_2$. A heavy, white crystalline powder, specific gravity 5.32, melting point 265° C, boiling point 303° C. Prepared by heating a mixture of mercuric sulphate and sodium chloride, with a little manganese peroxide, and collecting the sublimate. Soluble in water, alcohol, and ether. Very poisonous and an extremely powerful antiseptic. For general use, a solution of one part in 1,000 of water is an efficient disinfectant, but one part in a million of water will prevent the growth of most bacteria. Medicinally it is used both externally and internally. In the form of ointment it is used in all parasitic skin diseases, and to reduce swellings. Its principal use is in the treatment of syphilis, when it is given either by the mouth, in the form of ointment, injection, or by hypodermic.

The symptons of mercurial poisoning are salivation, fetid breath, virulent gastro-enteritis, and collapse. In acute cases death follows in a few hours. The best antidote is raw white of egg, and emetics should be given and the stomach pump employed.

Other uses of mercuric chloride are as a wood preservative, in the tanning industry, for embalming, and in textile printing.

MERCUROUS CHLORIDE. See CALOMEL.

MERCURY, in astronomy, the planet nearest the sun. Its stationary points are from 15 to 20 degrees of longitude from the sun, hence it rises and sets not far from the time when the sun does so. The light of the sun and the haze of the horizon combine to render observation of the planet difficult. It varies in brightness from 15″ to 12″ of the celestial circle or vault. Hence it is sometimes telescopic, and at other times visible to the naked eye, being as bright as a star of the second magnitude. It was known to the ancients. Its diameter is about 3,200 miles; its mass about 1-19 that of the earth; its sidereal period is 88 terrestrial days. It is seen at its greatest brightness as an evening star, at average intervals of about 116 days. Its average dis-

tance from the sun is 36,000,000 miles. The orbit of Mercury is remarkable for its extreme eccentricity, the distance from the sun varying periodically from about 28,500,000 to 48,500,000 miles.

In Chemistry.—A diatomic metallic element; symbol, Hg; at. wt., 200; sp. gr., 13.59; boiling point, 357.25; known from the earliest historical times, and the only liquid metal at ordinary temperatures. It is found most frequently in the form of mercuric sulphide, or cinnabar, an ore found in Spain, Austria, and other parts of the world, from which it is extracted by roasting the ore in a furnace, and conducting the vapors into a chamber where the mercury is condensed, while the sulphurous acid is allowed to escape. It possesses a luster like that of polished silver, and solidifies at—39.5° to a tin-white malleable mass, contracting at the moment of solidification.



MERCURY

In Classical Mythology.—A Roman deity, identified with the Greek Hermes. He was the son of Jupiter and Maia. He was the messenger and herald of the gods, and as such he was represented as a youth, lightly clad, with the petasus or winged hat, and wings on his heels, bearing in his hand the caduceus or emblem of his office as a herald, a rod with two serpents twined round about it.

MERCY, SISTERS OF, the name given to members of female religious communities founded for the purpose of nursing the sick at their own homes, visiting prisoners, attending hospitals, superintending the education of females, and the performance of similar works of charity and mercy. Communities of Sisters of Mercy are now widely distributed over Europe and the United States, and in general are connected with some religious denomination.

MEREDITH, EDWIN THOMAS, editor and publisher of Des Moines, Ia.; born in 1876 and educated at Highland Park College, Des Moines, From 1896-1902 he was editor and publisher of the "Farmers' Tribune." Through this and other publications he has exerted considerable influence over the farmers of Iowa and the Middle West. In 1913 President Wilson appointed him a director of the Federal Reserve Bank and in 1914 he was the Democratic candidate for United States senator. In 1920 President Wilson appointed Meredith Secretary of Agriculture to succeed Houston, at that time appointed to the Treasury Department. Secretary Meredith has always been a Democrat, and his strong influence among the Western farmers caused him to be mentioned in connection with the Democratic presidential nomination in 1920.

MEREDITH, GEORGE, an English poet and novelist; born in Hampshire, England, in 1828. He was educated in Germany; studied law, but essayed a literary career with a volume of poems in 1851. This was followed by the "Shaving of Shagpat" (1855); "Farina, a Legend of Cologne" (1857); "The Ordeal of Richard Feverel" (1859); "Evan Harrington" (1861); "Modern Love: Poems and Ballads" (1862); "Emilia in England" (1864); "Rhoda Fleming" (1865); "Victoria" (1866); "Adventures of Harry Richmond" (1871); "The Egoist" (1879);

"The Tragic Comedians" (1881); "Poems and Lyrics of the Joy of Earth" (1883); "Diana of the Crossways" (1885); "Ballads and Poems of Tragic Life" (1887); "One of our Conquerors" (1891); "Lord Ormont and his Aminta" (1894); "The Amazing Marriage" (1895); "Odes in Commemoration of the History of France" (1898); etc. He died May 18, 1909.

MERGENTHALER, OTTMAR (merG-en-tä'-ler), an American inventor; born in Württemberg, Germany, May 10, 1854; came to the United States in 1872 and received a government position in Washington to care for the mechanism of bells, clocks, and signal service apparatus; became connected with a mechanical engineering firm in Baltimore, Md., in 1876. Subsequently, while still engaged with that company, he began experiments which resulted in the invention of the type-setting machine bearing his name. His plan as finally perfected consisted of a keyboard by means of which a line of type or dies could be set, adjusted to a desired width, and cast into a solid line of type metal. He patented his invention, but it was not successful till the linotype company which he had formed purchased the Rogers spacer. He died in Baltimore, Md., Oct. 28, 1899.

MERGER, a term in old English law, bearing on the relations between landlords and tenants. In its more modern significance it constitutes a form of industrial combination, generally known as a trust. By a merger a number of industrial establishments, or corporations, are combined under a joint ownership, through what is technically known as a holding company. The majority stock of the various corporations to be controlled is exchanged for stock in the holding company, which thus acquires majority control of all in common, the transaction not always being obvious to outsiders. By a decision of the United States Supreme Court, in the case of the Northern Security Co., a holding company formed to control the Great Northern and the Northern Pacific railroad companies, mergers of this character were held to be illegal.

MERGUI ARCHIPELAGO, a group of islands in the Gulf of Bengal, lying off the S. provinces of Burma; they are mountainous, some rising to 3,000 feet, of picturesque beauty, and sparsely inhabited by a race called the Selungs.

MÉRIDA (mā'rē-*thä*) (ancient Augusta Emerita), a decayed town of Spain, situated on the right bank of the Guadiana, 36 miles E. of Badajoz. It is remarkable for its Roman remains, which include a bridge of 81 arches, 2,575 feet long and 26 feet broad, erected by Trajan; the ruins of half a dozen temples, of an aqueduct, a circus, a theater, a naumachia, a castle, and the Arch of Santiago, 44 feet high, built by Trajan. There is also an old Moorish palace. Merida was built in 23 B. C., and flourished in great splendor as the capital of Lusitania. In 713 it was taken by the Moors, who lost it to the Spaniards in 1229.

MÉRIDA, city and capital of the Mexican state of Yucatan; on a barren plain, 25 miles S. of Progreso, on the Gulf of Mexico, and 95 miles N. E. of Campeachy; occupies the site of a former native city, and was founded by the Spaniards in 1542; has a cathedral and many churches, a university, seminary, girls' high school, and conservatory of music, an antiquarian museum, a public library, hospital, alms-house, and foundling asylum; trade not extensive; pop. about 65,000.

MÉRIDA, a town of Venezuela, capital of Merida state; 5,290 feet above sea-level, at the foot of the Sierra Nevada de Merida, and 70 miles S. of the lake of Maracaibo; founded in 1558; it was almost wholly destroyed by an earthquake in 1812; is the seat of a bishop, contains a university and several higher schools, and has manufactures of carpets and woolen and cotton stuffs and exports coffee and fruits. Pop. about 17,000.

MERIDEN, a city in New Haven co., Conn.; on the New York, New Haven, and Hartford railroad; 18 miles N. by N. E. of New Haven. There are a high school, the Connecticut School for Boys, Meriden hospital, Curtis Home for Orphan Children and Aged Women, the Curtis Memorial Library, waterworks, electric light and street railroad plants, National and savings banks, and several periodicals. The city is widely noted for its manufactures, which include tinware, cutlery, bronze ware, electroplated ware, granite, iron and pearl agate ware, organs and organettes, brass and iron, gas and kerosene fixtures; bronze art goods, lamp trimmings, builders' furniture, carriage and saddlery hardware, table and pocket cutlery, shears, scissors, steel pens, clocks, screws, vises, shoes, firearms, curtain fixtures, piano stools, paper boxes, harness, printing presses, and machinery. Meriden was taken from Wallingford and incorporated in May, 1806. Pop. (1910) 27,265; (1920) 29,867.

MERIDIAN, a word connected in various ways with the idea of noon, or applied to the special conditions or culminating point in connection with a country, sphere of life, career, etc.

In geology: Noon-day; in allusion to the mid-day date of the strata to which it is applied. A term appropriated to certain middle formations of the Appalachian Palæozoic system, which are called in the New York Survey the Oriskany Sandstone, and which appear to be on the horizon of the Lower Ludlow rocks of England. The greatest thickness of this sandstone is less than 200 feet.

Celestial meridian: The great circle marked out on the sphere by the prolongation of the terrestrial meridian passing through the spot where the observer stands. Meridian altitude of the sun or of a star, altitude when on the meridian of the place where it is observed. Meridian distance of a point, the distance from the point to some assumed meridian, generally the one drawn through the extreme E. or W. point of the survey. Meridian of a globe, the brazen circle in which it turns and by which it is supported; also meridian lines drawn on the globe itself, generally at a distance of 15°. Terrestrial meridian, the terrestrial meridian of any place on the earth's surface is a great circle passing through both of the earth's poles and the place.

MERIDIAN, a city and county-seat of Lauderdale co., Miss., on the Queen and Crescent Route, the Southern, and the Mobile and Ohio railroads; 90 miles E. of Jackson. It contains Meridian Male College, Lincoln School, Meridian Female College, the Meridian Academy, electric lights, National and savings banks, and daily and weekly newspapers. Meridian is in the heart of a rich lumber region which accounts for its large trade. It has machine shops, cotton mills, and other manufactories. It was here, on Feb. 16, 1864, that General Sherman made "the most complete destruction of railways ever held." Pop. (1910) 23,385; (1920) 23,399.

MERIDIAN CIRCLE, or **TRANSIT CIRCLE**, an instrument used in observatories in modern times to combine the functions of a transit instrument and of the old mural circle. A vertical circle is carried on the axis of the transit instrument and revolves with it, its divisions being read by micrometer microscopes mounted solidly on one of the piers. In this way both co-ordinates of the position of a heavenly body, its right ascension and declination are determined at the same meridian passage—a great saving of time over the old method with the instruments.

MÉRIMÉE, PROSPER (mā-rē-mā'), a French author; born in Paris, France, Sept. 28, 1803. He studied law, but never practiced; was senator in 1853. His best known works were the two novels, "Colomba" (1830), treating of the Corsican vendetta; and "Carmen" (1840), which furnished the plot of Bizet's opera of the same name. He wrote besides: "Plays of Clara Gazul" (1825); "Historic Monuments" (1843); "Historic and Literary Medleys" (1855), a collection of comedies in the style of the Spanish "intermezzo"; "Guzla" (1827), a collection of Illyrian lyrics; "Mateo Falconne," a novel; "Letters to an Unknown" ("Letters à Une Inconnue": 1873); etc. He died in Cannes, France, Sept. 23, 1870.

MERINO (me-rē'nō), a Spanish breed of the domestic sheep. It is extremely important commercially, on account of the excellence of its wool, which is close-set, soft, spirally twisted, and short. A fine French woolen material is made from the wool of the merino sheep.

MERIT, ORDER OF, instituted in London, Jan. 26, 1902, by King Edward VII. to confer distinction on persons who have won prominence in science, army and navy, art, literature, and professional services, excepting political. The order consists of the sovereign and members, and initials, after the Bath, have precedence over all other knightly orders. Among distinguished men on whom the order was conferred were Lord Kitchener, Admirals Seymour, Wilson, and Lord Fisher, representing the navy. Sir William Crookes, Lord Raleigh, and Sir Archibald Geikie in science, and literature has been so honored in Viscount Morley, Lord Cromer, Sir George Trevelyan, and Thomas Hardy. Sir Edward Elgar received the honor for music. Honorary membership in the order has been conferred on distinguished men of other nations.

MERLIN, a prince of enchanters of the time of the Saxon invasion of England. He was the son of a damsel seduced by a fiend, but Blaise baptized the infant, and so rescued it from the power of Satan. He died spellbound by his mistress Vivian in a hawthorn bush.

MERMAIDS and **MERMEN**, in the popular folklore of Europe, a class of creatures more or less like human beings, living in the sea, but in some circumstances capable of social relationship with men and women.

MEROË (mer'ō-ē), a city and state of ancient Ethiopia, in the N. E. part of Africa, corresponding mainly with the district between the Nile and Atbara, N. of Abyssinia. Meroë was the center of the caravan trade between Ethiopia, Egypt, Arabia, northern Africa, and India. There are pyramids at the site of ancient Meroë and a small town of same name on the Nile.

MEROPS, the typical genus of the family *Meropidæ*. The bill moderate or long, arched, acuminate, margins entire; tongue narrow, horny at apex; tarsi short; tibiæ denuded above the heel; wings long, tail with two middle feathers elongate. Twenty-one species are known. *M. apiaster* is common in the S. of Europe and in Africa. The back is red-brown, the throat yellow with a black margin, breast and belly greenish-blue. It feeds on insects, especially wasps and bees, which it captures on the wing, like swallows.

MEROSTOMATA (-tom-a-tä), the order of *Podostomata*, represented by *Limulus*, the horseshoe or king crab, and a number of fossil forms popularly called in Scotland "seraphims," and known to zoölogists as Eurypterida. The latter resemble scorpions in general appearance, but were marine, some of their feet ending in paddles, while they breathed by gills. The typical forms of the latter group were *Pterygotus* and *Eurypterus*. They flourished in the Palæozoic Age, disappearing during the Carboniferous Period, when the predecessors of the king crab made their appearance.

MEROVINGIANS, or **MERWINGS**, the 1st dynasty of Frankish kings in Gaul. The name is derived from Merwig or Merovech, king of the Western or Salian Franks from 448 to 457. His grandson Clovis established the fortunes of the dynasty which gave way to the Carlovingians in 752.

MERRICK, LEONARD, English novelist and dramatist; born in London in 1864, educated at Brighton College and private schools. In 1918 his works were republished in a collected edition with introductions by well-known writers, among them Sir J. M. Barrie and Sir Arthur Pinero. His novels include: "Conrad in Quest of His Youth"; "When Love Flies Out of the Window"; "The Position of Peggy Harper"; "The Man Who Understood Women"; "The Quaint Companions"; "Cynthia"; "The Man Who Was Good"; "A Chair on the Boulevard"; "One Man's View"; "The Worldlings"; "The Actor-Manager"; "The House of Lynch," and "While Paris Laughed." His plays are: "The Free Pardon"; "When the Lamps Are Lighted"; "My Innocent Boy"; "The Elixir of Youth," and "A Woman in the Case."

MERRILL, county-seat of Lincoln co., Wis., 18 miles N. W. of Wausau, on Wisconsin and Prairie rivers, the Chicago, Milwaukee and St. Paul railroad. Has handsome public buildings and parks. Center of region rich in timber. Has large sash and shoe factories. Pop. (1910) 8,689; (1920) 8,068.

MERRILL, SELAH, an American archæologist; born in Canton Centre, Conn., May 2, 1837. He was chaplain in the Civil War (1864-1865); after that was engaged in explorations in Palestine. He was consul at Jerusalem 1884-1886, in 1890-1893, and after 1898. Among his works are: "East of the Jordan" (2d ed. 1883); "Galilee in the Time of Christ" (1881); "The Site of Calvary" (1886); "Ancient Jerusalem" (1906). He died in 1909.

MERRIMAC, a river rising among the White Mountains of New Hampshire, flowing S. into Massachusetts, and falling into the Atlantic Ocean near Newburyport, after a course of 150 miles; it has numerous falls, affording immense water power, and is navigable to Haverhill. The principal manufacturing towns on its banks are Manchester, Nashua, and Concord in New Hampshire, and Lowell and Lawrence in Massachusetts.

MERRITT, WESLEY, an American military officer; born in New York City, June 16, 1836; was graduated at the United States Military Academy in 1860; assigned to the dragoons and served in the Federal army with gallantry and distinction throughout the Civil War. He was promoted captain April 5, 1862; took part in General Stoneman's raid toward Richmond in April and May, 1863, and was in command of the reserve cavalry brigade in the Pennsylvania campaign of the same year, being commissioned Brigadier-General of volunteers in June; for gallantry at Gettysburg he was brevetted major. He took part in the various engagements in central Virginia in 1863-1864, and was brevetted colonel, U. S. A., and Major-General, U. S. V., for gallantry at the battles of Yellow Tavern and Winchester, and Brigadier-General and Major-General, U. S. A., for bravery at Five Forks, and his services during the final Virginia campaign. He was ordered to Fort Leavenworth, and in 1897 he became Major-General, U. S. A. In 1898 he commanded the land forces of the United States in the Philippine campaign, which culminated in the fall of

Manila, Aug. 13. In 1899 he was placed in command of the Department of the East, with headquarters at Governor's Island, N. Y. He died Dec. 3, 1910.

MERRY DEL VAL, RAFAEL, CARDINAL, Roman Catholic ecclesiastic; born in London, Oct. 10, 1865, son of the secretary of the Spanish Embassy there. His family is of Irish extraction, Merry being his father's and Wall, altered into Val in Spain, his mother's name. He was educated in England and at Rome, and was introduced to the notice of Pope Leo XIII. by his father. He soon gained the Pontiff's favor, being appointed Papal Chamberlain in 1892 and Archbishop of Nicosia in 1900. He acted as secretary to the consistory that elected Pope Pius X. in 1903, who shortly afterward made him his Secretary of State, and created him cardinal. His reactionary policy as adviser to his Holiness led to the estrangement from Rome of both France and Spain, and to much loss of prestige by the Vatican. In September, 1914, following the accession of Pope Benedict XV., he was succeeded as Secretary of State by Cardinal Gasparri, and in October, 1914, was appointed Secretary of the Congregation of the Holy Office.

MERSEBURG, a town of Prussia on the Saale. Henry the Fowler in 934 gained his great victory over the Hungarians near Merseburg, which suffered much in the Peasants' War and in the Thirty Years' War. Pop. about 23,000.

MERSEY, a river of England, rising on the borders of the counties of Chester, Derby, and York, and after a S. W. course of 60 miles, in which it receives the waters of the Goyt, Irwell, Bollin, Weaver, and other tributaries, it empties into the Irish Sea, by a large estuary at Liverpool. It is navigable as far as Manchester, 31 miles.

MERTHYR-TYDVIL (-tud'vil), or **TYDFIL** (so called from the martyrdom here of a Welsh princess of that name), a parliamentary borough and market-town of south Wales, on the confines of the counties of Glamorgan and Brecknock, 24 miles N. by W. of Cardiff, its port, and 178 W. of London. Pop. about 85,000.

MERTON COLLEGE (England), the oldest college in Oxford of its type and all secular colleges later established in Oxford and Cambridge were modeled after it. It was founded by Walter de Merton in 1263 as the House of Scholars of Merton. The endowment consisted of the founder's manor-house and estate at Malden, Surrey, the income going to the support of scholars at Oxford. Between 1264-74 the scholars were moved from the rented premises to Merton Hall, purchased by the founder. The college buildings have undergone many changes since first established, but the 13th century parts are among the most interesting architectural examples in Oxford. The chapel, of cathedral size, though without transepts, is still uncompleted.

MERU, in Hindu mythology, a fabulous mountain in the center of the world, 80,000 leagues high. It is the most sacred of all mythical mountains, and the abode of Vishnu.

MERV, an oasis in central Asia, N. of Afghanistan, forming a part of the former Russian Transcaspian province. In 1815 the oasis was subjugated by the Khan of Khiva, to whom it remained tributary for about 20 years. Subsequently Persia attempted to make good the claims which it had long laid to this district, and in 1860 fitted out an expedition for the purpose, which, however, miscarried completely. In 1881 General Skobeleff led a Russian expedition against the Teke-Turcomans, captured their stronghold of Geok Tepe, and received the submission of the people of Merv. It was annexed by Russia in 1884. Pop. about 120,000.

MERWIN, SAMUEL, editor and author; born in Evanston, Ill., 1874; educated at the Northwestern University. Became associate editor of the "Success Magazine" in 1905, and for this magazine traveled in China in 1907 to study the opium question. His first book in collaboration with H. K. Webster, "The Short Line War," appeared in 1899. His other works include: "Calumet K." (also with H. K. Webster), "The Road to Frontenac," "The Whip Hand," "His Little World," "The Merry Anne," "The Road Builders," "Comrade John," "Drugging a Nation," "The Citadel," "The Charmed Life of Miss Austin," "Anthony the Absolute," "The Honey Bee," "The Trufflers," "Temperamental Henry."

MERWINGS. See MEROVINGIANS.

MESA, a high plane or table-land; more especially a table-land of small extent rising abruptly from a surrounding plain; a term frequently used in that part of the United States bordering on Mexico.

MESA VERDE, a peculiar plateau in the southwest corner of Colorado, on the right bank of the Mancos river, 15 miles in length and about 8 wide. Its base is from 300 to 500 feet above the floor of the valley, while its sheer walls

of yellow sandstone rise another 200 or 300 feet higher. On the green, level top and around the base are found the ruins of the ancient aborigines, known as cliff dwellings. The Mesa Verde is a point of great attraction to tourists.

MESEMBRYACEÆ (-bri-ā'se-ē), an order of perigynous exogens, alliance Ficoidales. It consists of succulent shrubs or herbs, with opposite simple leaves. The flowers are terminal, though so short-stalked as to appear lateral; they are showy, and generally open under the influence of sunshine, closing on its departure. Petals in many rows. Stamens indefinite in number; ovary inferior or nearly superior, many or one-celled. Stigmas numerous, distinct, ovules indefinite, attached to a central placenta. Fruit capsular, surrounded by the fleshy calyx opening in a stellate manner at the apex, or splitting at the base. Found chiefly on the hot, sandy plains of south Africa. A few grow in the N. of Africa, in the S. of Europe, in Asia, the islands of the Pacific, and South America. Known genera, 16; species upward of 400.

MESHHED, MESHED, or **MASHHAD** (the "place of martyrdom"), a city of Persia, capital of Khorasan, and the center of important trade routes to Merv, Bokhara, and elsewhere, situated on a tributary of the Hari-Rud, 200 miles N. W. of Herat, and 460 E. by N. of Teheran; manufactures felt-rugs, carpets, swords, turquoise jewelry, and velvet, cotton, and silk goods. Imam Riza, a follower of Ali, was the 8th imam of the Shiite sect, to which body of Moslems Meshhed is a sacred city. The climate is severe in winter, owing to the elevation, 3,055 feet. In summer the temperature ranges from 76° to 90° F. Near by are the ruins of Tas, the old capital of Khorasan, in which were buried Firdousi, the celebrated poet, Haroun-el-Raschid, the Sultan of the "Arabian Nights," and the Imam Riza. Pop. about 60,000.

MESIHI (mes'i-hē), a Turkish poet; flourished in the 14th century. He is one of the seven poets called by the Turks "the Pleiades," and whose names, written in gold, are suspended in the temple of Mecca. Sir William Jones, in his "Commentaries on Asiatic Poetry," translated one of his idyls.

MESMER, FRIEDRICH ANTON, or **FRANZ,** a German physician; born near Constance, Baden, May 23, 1734. He was bred for the priesthood at Dillingen and Ingolstadt, but took up the study of medicine at Vienna, and took his doctor's degree in 1766 with a treatise on the influence of the planets. About 1772 he began to investigate the curative powers of the magnet, and was led to adopt the opinion that there exists a power, similar to magnetism, which exercises an extraordinary influence on the human body. This he called animal magnetism (see MESMERISM), and published an account of his discovery, and of its medicinal value, in 1775. He died in Meersburg, Baden, Mar. 5, 1815.

MESMERISM (mez'-), the system popularized by Mesmer, and by him called animal magnetism. Mesmer delighted in mysterious surroundings, and affected a strange weird style of dress; but one of his disciples, the Marquis de Puysegur, showed that sleep might be induced by gentle manipulation alone, thus removing mesmerism from the sphere of mystery. The chief phenomena are a hypnotic state induced by the patient gazing fixedly at some bright object, or by passes made by the operator; muscular rigidity, sometimes to such an extent as to admit of the body resting supported only by the head and heels on two chairs, insensibility to pain, and perverted sensation, as exhibited in a slightly hypnotized patient drinking water and imagining it to be delicious wine or nauseous medicine at the will of the operator. See HYPNOTISM.

MESNE (mēn), an English law term, meaning middle, intermediate, intervening; as, a mesne lord, that is, one who holds lands of a superior, which or part of which he sublets to another person; in this case he intervenes between the two, being a tenant of the superior lord, and lord to their inferior tenant.

MESOPOTAMIA (-tā'miä), in ancient geography, a country of western Asia, situate between the Tigris and the Euphrates. It was called, in the Old Testament, Aram Naharaim, or "Syria between the two waters," and Padan Aram, *i. e.*, "Syria of the Plain," and is first mentioned in the Scriptures as the country where Nahor and his family settled (Gen. xxiv: 10). It was long part of the seat of the very ancient Babylonian dominion, and subsequently of the Mede, Persian, and Macedonian. The Romans obtained possession of Mesopotamia in 165. Jovian surrendered it to the Persians in 363. The Carmathians overran it in 902, and the Turks conquered it between 1514-1516.

Modern Mesopotamia is largely peopled by Arabs, and comprised of the two pashalics of Bagdad and Diarbekr. Many years before the World War Ger-

many longed for Mesopotamia, which would place her in a position to strike at India and Egypt. In 1897 a German company obtained a concession from the Sultan for a railroad from Konieh to Bagdad and Basra, on the Persian Gulf. Great Britain remonstrated, and diplomatic exchanges continued until the World War broke out. A British force invaded Mesopotamia in 1915, and after defeating the Turks, General Townshend occupied Kut-el-Amara, 100 miles from Bagdad. General Sir John Nixon, commanding the expedition, ordered General Townshend to advance on Bagdad, but when within 18 miles of that city the Anglo-Indian force met with a heavy defeat, and fell back on Kut, where they were besieged for 143 days and surrendered on April 28, 1916. The Turks subsequently defeated three Russian and British invasions. A British army under General Maude was more successful in 1917. Kut was recaptured on Feb. 23, and Bagdad fell March 7-10, but it was not until October of 1918 that the Turk was completely vanquished in Mesopotamia. In 1919 Great Britain was given practically a protectorate over the country.

MESOZOIC, a term introduced by Phillips to designate the group of geological systems, the fossil remains of which differ equally from those of the Palæozoic ("ancient-life") and Cainozoic ("newer-life") eras. It is synonymous with the term Secondary, and includes the Triassic, Jurassic, and Cretaceous systems.

MESQUIT, or **MESQUITE** (mes-kēt'), the shrub or tree *Prosopis juliflora*, of the United States and Mexico. Its wood is of a brown or red color, is heavy and hard and susceptible of a fine polish. It yields a gum resembling gum arabic. Its fruit pod, called the "mesquit bean," is used as a fodder for cattle.

MESSALINA (-lī'nä), the name of two Roman empresses. MESSALINA VALERIA, who had for her fifth husband the Emperor Nero, who had murdered her fourth husband, Atticus Vistimus. After the death of the emperor, in the year 68, she devoted herself to literary pursuits. MESSALINA VALERIA, daughter of Valerius Messalinus Barbatus, who became the wife of Claudius, and shared with him the imperial throne. Her licentious conduct is unparalleled in history, for she not only made her husband's palace the scene of her debaucheries, but often quitted it at night, and acted as a common prostitute. When summoned by the enraged emperor, after some fresh extravagance, in the year 48, she attempted to kill herself, but lacked courage, and her enemy Narcissus, who dreaded the result of the interview, caused her to be dispatched by a soldier.

MESSENIA (sē'ni-ä), in ancient Greece, the W. of the three peninsulas that project S. from the Peloponnesus; bounded on the E. by Laconia, and on the N. by Arcadia and Elis. It was composed chiefly of fertile plains, separated by mountain chains and watered by the Pamisus and other streams, and yielded abundant corn and wine. The original Pelasgic inhabitants were conquered by the Dorians, but soon absorbed their conquerors and rose to great prosperity. This excited the envy of the Spartans, who waged two long wars (743-724 and 685-668) against the Messenians. Most of those who survived the second war emigrated to Sicily, where they took possession of Zancle, and changed its name to Messana, the present MESSINA (*q. v.*). Those who submitted to Sparta were made helots; but they revolted and waged a third war of 10 years' duration (from 464). The survivors settled in Naupaktos. After the battle of Leuctra (370) Epaminondas invited the descendants of the Messenians back to Greece, and they joyfully responded to his invitation. Their independence continued till the Roman conquest in 146 B. C. Messenia is the name of a nomarchy of the modern kingdom of Greece.

MESSIAH, or **MESSIAS** (-sī'as), in Jewish history and faith, the Anointed One; a certain Personage or Being regarding whom Daniel prophesied.

In Christian history and faith, the Anointed One is in Greek *Christos*, from chrio=to anoint. So thoroughly are the words identified, that the Hebrew *mashiachh*, which occurs 39 times in the Old Testament, is in every case rendered in the Septuagint christos. When Jesus of Nazareth consented to accept the appellation "the Christ," or simply "Christ," as His official designation, He claimed to be the Messiah of Daniel's prophecy (Matt. i: 16, xvi: 20, xxvi: 63; Mark viii: 29, xiv: 61; Luke iii: 15, ix: 20, xxii: 67; John i: 41, vi: 69, etc.). All Christendom has acknowledged the claim.

MESSINA (mes-sē'nä) ancient Messana, or Messene), a city of Italy, in the N. E. of Sicily, on the Strait of Messina, 56½ miles N. E. of Catania, and 120 N. E. of Palermo; manufactures damasks and satins; trade very considerable; the exports consist principally of silk, oil, wine, coral, fruits, etc.; the imports are cotton and woolen fabrics, hardwares, and other articles of colonial produce.

The town runs parallel with the strait, and has, for its finest part, the Marina, a long line of buildings facing the harbor, and running parallel with it for more than a mile. A broad quay separates it from the water. The town sweeps along the swelling eminences, and gradually rises so as to present almost every public edifice in a striking point of view. The whiteness of the buildings forms a beautiful contrast to the dark-green of the forests behind. The harbor, which is formed by a projecting tongue of land, curved in the shape of a sickle, is 4 miles in circumference, the finest in the Mediterranean, and can accommodate more than 1,000 ships. The entrance, which is 700 yards wide, is defended by Fort Porto Reale and Fort Salvatore. On Dec. 28, 1908, Messina was almost totally destroyed by an earthquake, which killed over 95,000 people. The city has now been partially rebuilt and its industries resumed. Pop. about 130,000.

MESSINES, a village in Belgian Flanders. It was occupied by the Germans when they overran Belgium in the summer of 1914, and constantly under fire during the fighting around Ypres.

In the battle of MESSINES RIDGE (*q.v.*) the village was captured by the Rifle Brigade of the New Zealand Division. The Germans had orders to hold the place at all costs and the fighting was intense in cellars and dugouts before the New Zealanders gained possession.

MESSINES RIDGE (Belgium). On June 7, 1917, General Plumer's Second British Army attacked Messines Ridge, occupied by German troops, after twenty mines, the work of months, had been exploded. It was a one day's battle in which the British won high ground that commanded the country around for nine miles in the direction of Ypres. The British by this operation gained a position that had long threatened their lines in the Ypres region. 7,200 prisoners fell into British hands, including 145 officers. 67 guns, some of large caliber, were captured, as well as 294 machine guns and 94 trench mortars. The British losses were about 16,000. The Germans recaptured Messines Ridge in the spring of 1918, but lost it when the allied armies began their great offensive in the summer of that year.

MESTIZOS (mes-tē'zōs), people of mixed origin in countries where Spanish Europeans have settled and intermingled with the natives, as in the Philippines.

META (mā'tä), a river of South America, rising on the E. slope of the N. E. range of the Andes, about 40 miles S. of Bogota (United States of Colombia), flowing a general E. N. E. course into Venezuela, and entering the Orinoco river; length, about 500 miles.

METABOLA (-tab'o-lä), a sub-class of insects, containing those having complete metamorphosis. The larva, pupa, and imago are all very different in appearance, and these several states constitute three quite distinct phases of life. The larva is known as a maggot, a grub, or a caterpillar. The pupa, which is always quiescent, is sometimes called a chrysalis. Dallas divides it into two sections: Mandibulata, containing the orders *Coleoptera, Hymenoptera,* and *Neuroptera;* and Haustellata, containing the orders *Lepidoptera, Diptera,* and *Aphaniptera.*

METACARPUS (-kar'pus), the bony structure of the palm of the hand, between the wrist and the fingers; it comprises five shafted bones.

METACENTER, the point of intersection of the vertical line passing through the center of gravity of a floating body *in equilibrio,* and a vertical line through the center of gravity of the fluid displaced, if the body be turned through a small angle, so that the axis takes a position inclined to the vertical. If the metacenter is above the center of gravity, the position of the body is stable; if below it, it is unstable.

METALLOGRAPHY, the study of the structure of metals and alloys, and their relation to the physical properties. Serious work along these lines was first begun in 1863 by Sorby. He made the first rock sections, and compared the structure of iron and steel with that of meteorites. The study was soon developed, until it has become the recognized method for testing the strength of materials, and the results of different alloys with iron, steel, and other metals.

METALLURGY. For the specific treatment of the ores of copper, gold, iron, silver, tin, zinc, etc., see the articles on those metals.

As now understood metallurgy is the art of extracting metals from their ores. The operations are partly mechanical and partly chemical. Those processes which depend principally on chemical reactions for their results have reference chiefly to the roasting and smelting of ores, and are described under the heads of the different metals. But there are certain preliminary operations of a mechanical kind which metallic ores undergo, such as crushing, jigging, washing, etc., which we shall describe here, as they are essentially the same for the ores of

lead, copper, tin, zinc, and indeed most of the metals. Till comparatively recent times ore, or rather ore-gangue, as it came from the mine was in the first instance broken by hammers before being passed on to crushing rollers or stamps to be reduced to smaller pieces or grains. In the year 1858 Mr. E. W. Blake of New Haven, Conn., invented a stone or ore crusher which has become so extensively used that it has, except in special cases, superseded hand labor for breaking up large pieces of ore. After passing through this or some similar crusher, the vein stuff or impure ore is next taken either to the crushing rollers or to the stamping mill.

In recent years there has been continued improvement in the methods of carrying on metallurgical processes. The conditions produced by the war called for a production of iron and steel on an immense scale, and many improvements were devised to produce this result. One of the most important was the synthetic cast made from steel turnings by melting in an electric furnace in contact with coke. By this process power consumption was more than double and iron of a very high degree of purity is obtained. The use of electric furnaces continued to increase. Especially in the treatment of non-ferrous metals, some important improvements were made in the designs of blast furnaces in 1917. See MINERAL PRODUCTION, UNITED STATES.

METALS. Though each metal is considered in a separate article, there are various points regarding the general physical and chemical characters of these bodies, and the method of classifying them, which require notice. A metal, from the chemical point of view, is an element which can replace hydrogen in an acid and thus form a salt. Hydrogen itself is, chemically, considered to be a metal. Those elements which are non-metallic in this sense are called metalloids.

The following are the most important of the physical properties of the metals: (1) All metals, unless when they are in a finely-pulverized form, exhibit more or less of the charactistic luster termed metallic. Two of the non-metallic elements, iodine and carbon, in some forms also present a metallic luster. (2) All metals are good conductors of heat and electricity, though in very unequal degrees. (3) With the exception of mercury, all the metals are solid at ordinary temperatures. With the exception of gold, copper, calcium, and strontium, the metals are, when light is only once reflected from them, more or less white, with a tendency to blue or gray. Most of them have been obtained in crystals, and probably all of them are capable of crystallizing under certain conditions. (4) Metals are remarkable for their opacity, except when they are chemically reduced to extremely thin films. (5) All the metals are fusible, though the temperatures at which they assume the fluid form are very different, and some of them, as mercury, arsenic, cadmium, zinc, etc., are also volatile. (6) Great weight, or a high specific gravity, is popularly but erroneously regarded as a characteristic of a metal; while platinum, osmium, and iridium (the heaviest bodies known in nature) are more than 20 times as heavy as water, lithium, potassium, and sodium are actually lighter than that fluid. (7) Great differences are observable in the hardness, brittleness, and tenacity of metals. While potassium and sodium may be kneaded with the finger, and lead may be marked by the finger-nail, most of them possess a considerable degree of hardness. Antimony, arsenic, and bismuth are so brittle that they may be easily pulverized in a mortar; while others, as iron, gold, silver, and copper, require great force for their disintegration. Taking iron and lead as representing the two extremes of tenacity, it is found that an iron wire will bear a weight 26 times as heavy as a leaden wire of the same diameter.

Various classifications of the metals have been suggested by different chemists. The following is probably one of the most convenient:

(I.) The LIGHT METALS, subdivided into—

(1) The metals of the alkalies—viz., potassium, sodium, cæsium, rubidium, lithium.

(2) The metals of the alkaline earths—viz., barium, strontium, calcium, magnesium.

(3) The metals of the true earths—viz., aluminium, glucinum, zirconium, yttrium, erbium, terbium, thorinum, cerium, lanthanum, didymium.

(II.) The HEAVY METALS, subdivided into—

(1) Metals whose oxides form powerful bases—viz., iron, manganese, chromium, nickel, cobalt, zinc, cadmium, lead, bismuth, copper, uranium, thallium.

(2) Metals whose oxides form weak bases or acids—viz., arsenic, antimony, titanium, tantulum, niobium, (or columbium), tungsten, molybdenum, tin, vanadium, osmium.

(3) Metals whose oxides are reduced by heat—noble metals—viz., mercury, silver, gold, platinum, palladium, iridium,

ruthenium, rhodium, osmium. (Several of the rare metals are here omitted.) See MINERAL PRODUCTION, UNITED STATES.

METAL-WORKING MACHINERY, machines and devices for the shaping of raw metals into the finished forms required by commerce, or the engineer's designs. There are two main classes: First, those machines which make or perfect one article or design in great numbers, and with speed, and, second, those which are adapted to all kinds of work. The latter are called machine tools, and are controlled by the workmen, whereas the first class are usually to a large extent automatic.

METAMORPHIC ROCKS, or METAMORPHIC STRATA, in geology, the term—first proposed by Lyell in 1833, and since universally adopted—for the stratified crystalline rocks—that is, rocks which have been presumably laid down originally by the action of water, and then transformed by fire, chemical agency, pressure, or all combined. Metamorphic action is divided into local—affecting only small portions of rock, or small areas, and regional—affecting rocks over considerable regions. The metamorphic rocks constitute one of the five great classes of rocks. The chief are gneiss, eurite, hornblende schist, serpentine, actinolite schist, mica-schist or micaceous schist, clay slate, argillaceous schist or argillite, chlorite schist, quartzite or quartz rock, and crystalline or metamorphic limestone. Besides these which were probably the first sedimentary, the other classes of rocks have in places undergone metamorphosis.

METAMORPHOSIS (-mor'fo-sis), a change or transformation in the form, shape, structure, or character of anything.

In botany, a change, especially of an abnormal character, in an organ. It may be progressive or retrogressive. Calyx, corolla, stamens, and pistils are all transformed leaves.

In entomology, it means a series of transformations which insects undergo in their progress from the egg to full maturity. There are analogous changes that are more or less complete in the other orders.

In zoölogy, metamorphosis takes place in many other animals besides insects. Thus a barnacle (Lepas) or an acorn-shell (Balanus) is at first a free and swimming creature, which ultimately becomes sedentary and attached to rocks or ships' bottoms. Metamorphosis exists also in Annelids, in Mollusks, in Medusas, etc.

METAPHOR, a figure of speech in which one object is likened to another by speaking of it as if it were that other; distinguished from a simile by not employing any word of comparison, such as "like" or "as."

METAPHYSICS, a term popularly employed to denote a science dealing with subjects incapable of being dealt with by physical research.

METAURUS (-tâ'-), a river of central Italy, still called the Metauro, emptying into the Adriatic near Fano. On its banks the Romans defeated the Carthaginians under Hasdrubal in 207 B. C.

METAYER (-tā'yur), one who cultivates the soil under an arrangement with his landlord, not paying a fixed rent, either in money or in kind, but a certain proportion of the produce, the landlord furnishing the whole or part of the stock, tools, etc.

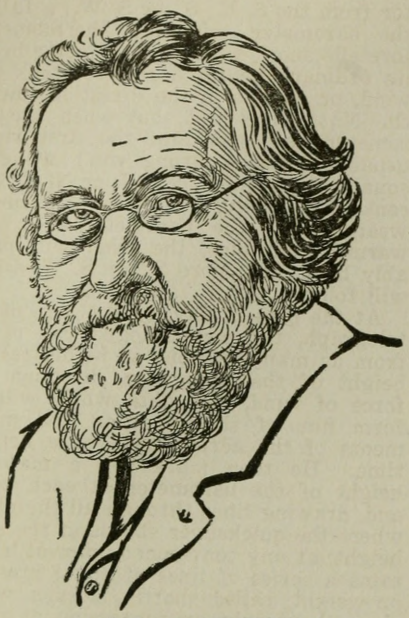
METAZOA (-zō'-), many-celled animals, composed of tissues, originally developed from three cell layers. The group comprises all the higher animals, from sponges to man, and is opposed to the Protozoæ, which are microscopic or one-celled animals.

METCALF, VICTOR HOWARD, American public official; born at Utica, N. Y., Oct. 10, 1853. He was graduated from Yale in 1876, and was admitted to the Connecticut and New York bars in 1877, after which he practiced at Utica, and Oakland, Cal. In 1899 he was elected as Republican member to Congress from California. In 1904 he was appointed by President Roosevelt Secretary of the Department of Commerce and Labor, and in 1906 Secretary of the Navy, retiring in 1908 on President Taft's election.

METCHNIKOFF, ELIE, a Russian bacteriologist, born in Kharkov, Russia, 1845. He studied in Germany, then became professor of zoölogy at Odessa in 1870. In 1882 he devoted himself exclusively to private research, especially devoting himself to the digestive functions in animal organisms. Later he settled in Paris and was made *chef de service* in the Pasteur Institute in 1892. He was especially known for his theory on dieting, to the effect that old age may be retarded by refraining from eating certain foods which tend toward autointoxication. In 1908 he shared with Professor Ehrlich the Nobel prize for medicine. In 1909 he advanced his theory that a certain kind of soured milk contained bacilli, counteracting or retarding autointoxication. He died in Paris in 1916.

METEMPSYCHOSIS (-si-kō'sis), transmigration; the passage of the soul from one body to another.

METEOR, a luminous body appearing for a few moments in the sky, and then



ELIE METCHNIKOFF

disappearing, exploding or descending to the earth; a shooting star. On any clear night an occasional meteor may be seen, but the most brilliant displays are confined to particular dates. A very notable one is on Nov. 13 or 14. In 1864, Prof. H. A. Newton, of Yale College, predicted a display in 1866, and determined the length of the meteoric cycle, the annual period, and the probable orbit round the sun of the November stream. The display which came on Nov. 13, 1866, was splendid. It was seen all over Europe, at the Cape of Good Hope, and elsewhere. About 8,000 meteors were counted at Greenwich, and it is supposed that 1,000 more may have escaped observation. Professor Adams and others place the more magnificent displays at intervals of 33¼ years apart.

It is believed that a ring of meteors revolves round the sun, portions of it very thickly studded with them, while at others they are only sparsely scattered. Every year the earth's orbit cuts through the ring, though only at intervals of about 33 years through the part where they are most crowded. The meteors themselves are of iron, which, striking the atmosphere of the approaching earth with planetary velocity, ignite and go to dust. Leverrier considers that in A. D. 127 the attraction of the planet Uranus brought them into their present orbit. Heis and Alexander Herschel recognize about 100 other meteor systems; hence it has been found needful to distinguish them by names. The November meteors coming from the constellation Leo are called Leonids. The next in importance appear about Aug. 10, and come from the constellation Perseus. They are therefore named Perseids. They appear generally much earlier in the evening than the Leonids. There are also Lyrids, Geminids, Orionids, Draconids, Aquariads, Andromedes, etc. Professor Schiaparelli, of Milan, has shown that the orbits of particular comets often wonderfully coincide with those of meteoric rings. A small comet, called Temple's, invisible to the naked eye, coincides with the orbit of the November meteors, and a large one, called Tuttle's comet, visible to the naked eye in 1862 with that of the Perseids.

On Dec. 21, 1876, a detonating meteor exploded almost directly over the city of Bloomington, Ill., at a height of about 75 miles. Its detonating was so tremendous as to shake the city like an earthquake. Fragments of the meteor formed a cluster of fire-balls 5 miles wide and 40 miles long. The main portion of the meteor, with a rumbling roar like thunder, passed on E., and out of our atmosphere, over the Atlantic Ocean. On Feb. 10, 1896, a remarkable meteor exploded over the city of Madrid. Though it appeared during the daylight, its brilliancy was such as to dazzle the eyesight of persons in Madrid and to make it visible as far away as Gibraltar. It exploded at a height of about 15 miles, and so tremendous was the detonation that it was heard and its tremors felt over a radius exceeding 50 miles.

METEORITE, a so-called "shooting star" which has fallen upon the earth from space. The friction encountered when these portions of matter enter the earth's atmosphere, causes them to become incandescent, and as a rule they are completely disintegrated. Occasionally one will reach the earth's surface and in composition is found to consist of elements well-known terrestrially, iron and nickel being common. Meteorites vary in weight from a few ounces to several hundred pounds, one of the largest being known as the Caille Aerolite, which fell upon the Alps and weighed nearly 1,400 pounds.

METEOROLOGY, that branch of science which observes, registers, classifies,

and compares the various and varying phenomena of our atmosphere. It remarks, at the same time, the connection of those phenomena with heavenly bodies, and with the solid and liquid materials of the earth, in reference to their reciprocal and combined influence in determining the character of different climates, and with the view of learning the meteoric history of every region of our globe, of ultimately investigating the laws of atmospheric change and the plan of meteoric action; the theory, in fact, of meteorological phenomena, on which depends essentially the fitness of the various portions of the earth's surface of the production of different vegetable and other substances, and for the support of animal life.

It was not till the discovery of the barometer, in 1643, that the first great step was made toward a knowledge of the nature of our atmosphere. We were then, by its help, enabled to ascertain the weight and pressure of the great aërial ocean which surrounds us, and to learn when and where it was in a state of calm or storm. The invention of the thermometer, shortly afterward, gave the means of determining its temperature. The hygrometer for showing the amount of moisture it contained, and the anemometer for giving the direction and force of the wind, are also instruments of great importance to the meteorologist. The indications of these instruments, combined with the careful observation of atmospheric appearances, interpreted by the results of former observations, will enable the individual observer generally to predict the kind of weather that may be expected in his immediate locality for a day or sometimes longer in advance. A strip of seaweed forms a very useful hygrometer for practical purposes, provided it be not kept in a room warmed artificially. In fine weather it will keep dry and have a somewhat dusty feeling, but with an increase of moisture in the air will become limp and sticky, indicating a probable change of weather in the shape of rain.

Since the discovery of the barometer, the science of weather forecasting has made much progress in its details, but, for the individual observer, the method remains much the same now as before. The principal rule in use for forecasting the weather at present may be briefly stated as follows: A rising barometer usually foretells less wind or rain, and a falling barometer more wind or rain, or both; a high barometer fine weather, and a low one the contrary. If the barometer has been about its ordinary height at the sea-level, and is steady or rising, while the thermometer falls and the air becomes drier, N. W., N, or N. E. wind, or less wind, may be expected; and, on the contrary, if a fall takes place with rising thermometer and increasing dampness, wind and rain may be looked for from the S. E., S., or S. W.; a fall of the barometer, with low thermometer, foretells snow, with the barometer below its ordinary height a rise foretells less wind, or change in the direction toward the N., or less wet; but when the barometer has been low, the first rising usually precedes strong wind or heavy squalls from the N. W., N. or N. E., and continued rising foretells improving weather. If the barometer falls and warmth continues, the wind will probably back, and more S., or S. W. winds will follow.

At the present day, by the help of the telegraph, the meteorologist can obtain from as many stations as he desires the height of the barometer, direction and force of wind, etc., data which will inform him of the condition and movements of the aërial ocean at a definite time. He then marks on a map the height of the barometer at each place, and, drawing lines through all the places where the quicksilver stands at the same height, at any convenient interval he obtains a series of lines of equal pressure or weight, called shortly isobars, which show the height or depression at those places as the contour lines on a map show the different altitudes of the mountains and valleys. The thermometer readings, treated in the same way, are called isotherms. To make these synoptic charts (as they are called) complete, the force and direction of the wind, the amount of humidity, character of clouds, and other weather signs are also marked down, so that the chart may furnish a view of the weather at that particular time over the area from which reports have been obtained. Supposing now that at the same time the next day a new set of data are received and marked on another chart, a comparison of the two will show the nature and direction of the change going on, and enable the meteorologist to predict, to a certain extent, what will be the immediately coming weather. This is a general description of the way in which the forecasts of weather, printed in the daily papers, are made.

The World War brought about great activities in meteorological work, especially in relation to the atmosphere of aeronautics. Meteorological work was added to the routine activities of armies and navies with the duty of studying the atmosphere and the practical applica-

tion of the results to aeronautics. There was established in July, 1919, in Brussels, an International Union of Geodesy and Geophysics, one section of which is devoted to meteorology. New meteorological instruments include an improved pole star recorder, used for registering cloudiness of night. An improved snow sampler was also devised, as well as a new continuous recorder of atmospheric pollution. See WEATHER BUREAU.

METER. See METRIC SYSTEM.

METHODISM, one of the leading religious systems of English-speaking races. A religious society existed at Oxford in the year 1727, among the members of which were John and Charles Wesley and George Whitefield, young men studying for orders. They and their associates were half derisively called the "Godly," or the "Sacramentarian Club" (because they went through a mocking crowd to communicate at St. Mary's), and, finally, Methodists, from the methodical way in which they performed their religious duties. The first Methodist meeting house was built in Bristol, England, in 1740; later the Foundry in Moorfields, London, hired for a term of years, was fitted up as a preaching house. In 1744 the first conference was held; it was attended by six persons, all clergymen. At the conference held at Leeds in 1755, the separation between itinerant and local preachers was made broader; the former were to be supported by the contributions of the societies; the latter to support themselves by their ordinary callings, preaching during hours of leisure. By 1767 there were 32 of the former and some hundreds of the latter; in 1791 the former numbered 312. Charles Wesley, who had rendered the Methodists, and the English Churches generally, great service by his hymns, died in 1788, and John, at the age of nearly 88, on March 2, 1791. In the United States the government of the churches is generally Episcopal, though some of the bodies adhere to the primitive method of control. The two dominant bodies are the Methodist Episcopal Church and the Methodist Episcopal Church, South, which formerly composed but one connection, but in 1844 divided on the question of slavery.

The following shows the strength of the principal Methodist bodies in the United States in 1919:

Branches.	Ministers.	Churches.	Members.
Methodist Episcopal	18,642	29,377	3,718,396
Methodist Episcopal, South	7,498	19,122	2,108,061
Methodist Protestant	1,340	2,464	186,873
Other white (5 bodies)	2,184	2,505	79,334
African Methodist Episcopal	8,175	6,454	552,265
African Methodist Episcopal Zion	3,962	2,738	258,433
Colored Methodist Episcopal	3,402	2,621	245,749
Other colored (6 bodies)	598	256	16,875

The ministry is itinerant, the term of incumbency being limited, and the appointments made by the bishops and their councils (composed of presiding elders or sub-bishops). In doctrinal points they coincide with the Wesleyan Church, with but few minor differences, and may properly be regarded as an integral part of the great body of Wesleyans.

In 1784 John Wesley had executed a deed poll in Chancery, which, reserving his rights and those of his brother, provided that on his death his place should be supplied by a permanent body of 100 ministers, meeting at the conference, and called the Legal Hundred. They still constitute the supreme governing body of the Wesleyan Methodists. When it meets, it fills up by co-optation all vacancies which may have arisen during the year. The annual conference, during the consideration of spiritual questions, is composed of ministers only; but during the discussion of financial matters it consists of 240 ministers and 240 laymen.

METHUEN, a town of Essex co., Mass., 30 miles N. of Boston, on the Spicket river, Boston and Maine railroad. Has handsome buildings, including library and schools, and home of aged incurables. Cottons, woolens, knitted goods, chief manufactures. Town meeting form of city government. Pop. (1910) 11,448; (1920) 15,189.

METHUEN, PAUL SANFORD, 3d BARON, an English military officer; born Sept. 1, 1845, was educated at Eton and in 1864 became lieutenant of the Scots Guards. He served in Ireland, Egypt, Bechuanaland, was military attaché at Berlin, and saw active service in the Ashanti, Egyptian, and Boer wars. In the latter he was made commander of the 1st Division, 1st Army Corps, in 1899, and rendered signal service under Lords Kitchener and Roberts. On March 7, 1902, while leading a force of 1,200 men to Lichtenburg, he was attacked by the Boers under General De la Rey. The British were completely routed, losing four guns, several hundred men in killed and captured, among the latter being Lord Methuen, who was, however, released on March 13. He was general officer commanding-in-chief in South

Africa 1907-1909 and in 1911 was made field-marshal.

METHYL, an organic radical homologous with ethyl. Its formula is CH_3, but as it cannot exist in the free state, two such groups of atoms unite together to form ethane, $CH_3—CH_3$. As in the case of ethyl, methyl is the center of a whole group of substances known as the methyl group. Thus, the hydride of methyl, CH_3H, known as light carburetted hydrogen, marsh gas, or fire damp, is well known as the cause of explosions in coal mines. It is a light, inodorous gas, half as heavy as air; non-poisonous and very inflammable, forming an explosive mixture with seven volumes of air. Methyl alcohol, CH_3OH, is obtained as a by-product in the manufacture of beet-root sugar, and by the dry distillation of wood and from other sources.

METHYLATED SPIRIT, a mixture of 9 parts of alcohol, sp. gr. 0.920, with 1 part of pyroxylic or wood-spirit. This addition of wood-spirit renders it unfit for drinking, though it scarcely interferes with its power as a solvent.

METIS, the first wife of Jupiter, whom he was said to have devoured, after which Minerva was formed within his head.

METONIC (-ton'-) CYCLE, the cycle of the moon, a period of 19 solar years, after which the new and full moon fall on the same days of the year as they did 19 years before. This cycle was the invention of Meton, a celebrated Athenian philosopher, who flourished about 432 B. C. The Metonic cycle contained 235 lunar months, or 6,940 days.

METRIC SYSTEM, the system adopted by the French convention in 1799, in which all measures of length, area, capacity, and weight are based on the length of a quadrant of the meridian measured between the equator and the pole. The ten-millionth part of this quadrantal arc was adopted to be the linear measuring unit, which they called "mètre," applying it equally to superficial and solid measures, taking for the unit of the former the square of the decuple, and for that of the latter the cube of the tenth part of the meter. A meter is=1.09362311 yards or 39.370432 inches, the standard meter being taken as correct at 0° C., and the standard yard, as correct at 16 2-3° C. (See WEIGHTS AND MEASURES.) At the same time there was also chosen for the measuring unit of weight the quantity of distilled water equal in bulk to the same cube at a certain temperature. It was also decided that the multiples and submultiples of each kind of measure, whether of weight, capacity, surface, or length, shall be always taken in the decimal or decuple proportion, as the most simple, natural, and easy for calculation. The meter is the basis of calculation; from it are derived: Of area: the are, 1 square dekameter; of capacity, the liter, 1 cubic decimeter; of weight: the gramme, 1 cubic centimeter of water. The names of the graduations below the unit are formed from the Latin, and above the unit are formed from the Greek.

METRONOME, an instrument for beating and dividing the time in music; a musical time keeper. It has a small pendulum which, being set in motion by clock-work, beats audibly a certain number of times in a minute; and this number may be altered by moving a sliding weight so as to give it the speed required. To be correct, the metronome should beat seconds when set at 60.

METROPOLITAN, originally a bishop resident in a metropolis or the chief city of a province, now a bishop having authority over the other bishops of a province; that is, an archbishop.

METROPOLITAN MUSEUM OF ART. See ART, METROPOLITAN MUSEUM OF.

METROPOLITAN OPERA HOUSE, the home of grand opera in New York. The building of yellow brick and terra cotta is in the style of the Italian Renaissance and occupies the entire block bounded by Broadway, Seventh Avenue, 39th, and 40th Streets. The seating capacity is 3,426. It was first opened to the public Oct. 22, 1883, when the opera of "Faust" was given.

METTERNICH (met'ter-ni*h*), **CLEMENS, PRINCE VON**, an Austrian statesman; born in Coblenz, Prussia, May 15, 1773. He entered the diplomatic service as secretary at the Congress of Rastadt, in 1799. He was appointed Austrian ambassador, in succession, at the courts of Dresden, Berlin, and Paris. In 1809 he was appointed chancellor of state, on the resignation of Count Stadion. For nearly 40 years from that period, he exercised, almost without control, the highest authority in the Austrian empire. One of his first aims after entering on his high office was to bring about a marriage between Napoleon and an Austrian archduchess. After Napoleon was divorced from Josephine, Metternich escorted Maria Louisa to Paris. But this expedient of a humiliat-

ing sacrifice could not be permanent; and in 1813, after the great French disasters in Russia, war, at the instigation of Metternich, was again formally declared by Austria against France. In the autumn of that year the Grand Alliance was signed at Teplitz, and on the field of Leipsic Metternich was raised to the dignity of a prince of the empire. In the subsequent treaties and conferences the newly created prince took a very prominent part, and he signed the treaty of Paris on behalf of Austria. In 1815 he presided over the Congress of Vienna, and took a prominent part in the various congresses that were held in succession at Paris, Aix-la-Chapelle, Carlsbad, Laybach, and Verona; inculcating on all occasions, as far as in him lay, the principles of the divine right of kings, and repressing every aspiration of the people after civil, political, and religious liberty. In 1848 he was compelled to flee from Vienna; he returned in 1851, but never again assumed office. He died in Vienna, June 11, 1859.

METTRAY (met-trā'), a village of France, 5 miles N. of Tours; noted for its great agricultural and industrial reformatory, the parent of all such institutions. It dates from 1839.

METZ, the strongest fortress of the former German imperial territory of Alsace-Lorraine, and the capital of the district of Lorraine; before 1871 the main bulwark of France in her N. E. frontier, and capital of the department of Moselle. In August, 1870, Bazaine was compelled to retire into Metz with his army; and after an investment of 70 days, during which no attempt was made to take the city by force, Europe was startled to hear of the capitulation of Metz, by which 180,000 men and immense military stores fell into German hands (Oct. 27, 1870). By the treaty of Frankfort Metz was annexed to Germany as part of Lorraine and by the Treaty of Versailles it was restored to France. Metz was bombarded in November, 1918, and a general attack on the city was prevented only by an armistice of Nov. 11. Known to the Romans as Divodurum; it was afterward called Mettis. Pop. about 75,000.

MEUDON (muh-dông'), a town 5 miles S. W. of Paris, containing a château, rebuilt by Mansard for the Dauphin in 1695, and fitted up for Marie Louise by Napoleon in 1812, which was reduced to ruin during the bombardment of Paris in 1871, but has been restored. The Forest is a favorite holiday resort. Rabelais was curé of Meudon and the local church contains a statue of him. The sculptor Rodin had his studio and did much of his most famous work there. Pop. about 13,000.

MEUNIER, CONSTANTIN, Belgian sculptor and painter; born at Etterbeek, near Brussels, in 1831, he studied sculpture and painting at Brussels, accomplishing his first notable work in the latter art in "The Burial of a Trappist." His works have taken their subjects largely from historical and industrial fields, "The Peasants' War," "The Descent of the Miners" being typical of the subjects that interested him. After 50 he devoted himself almost entirely to sculpture. His masterpiece is the "Monument to Labor" in the Brussels gallery. He died in 1905.

MEURTHE-ET-MOSELLE (murt-ā-mō-sel'), a department in France; formed after the treaty of 1871 with Germany out of what remained of the former departments of Moselle and Meurthe; it has four arrondissements, Briey, Lunéville, Nancy, and Toul; area, 2,036 square miles; pop. (1906), 517,508; (1911) 564,730. The department belongs to the plateau of Lorraine, and is drained by the Moselle and its tributaries. It has very fertile soil, producing corn, wine, potatoes, fruit, beet-root for sugar, hops, etc.; possesses valuable iron mines; and is the first department in France for iron and steel, and the third for glass; there are also important manufactures of pottery, woolens, cottons, chemicals, tobacco, paper, beer, artificial flowers and embroidery work, etc.; rock salt is mined in large quantities. The department was the scene of almost continuous fighting throughout the World War, parts of it being occupied by the Germans. Capital, Nancy; pop. about 120,000. Other important towns are Lunéville, Toul, Longwy.

MEUSE, a department in France, touching Belgium in the N.; area, 2,405 square miles; pop. about 275,000. Capital, Bar-le-Duc. During the World War it was the scene of prolonged and heavy fighting. See MEUSE-ARGONNE BATTLES.

MEUSE (muhz), a river of western Europe, flowing through the N. E. part of France, Belgium, and southern Holland; rises in the department of Haute-Marne, France, 10 miles N. E. of Langres, and after a N. E. course of 400 miles, nearly half of which is in France, it enters the North Sea by three mouths, the Meuse on the N., the Flakkee in the middle, and the Grevelingen on the S. It is navigable three-fourths of its length, as far as Verdun, department of the Meuse.

MEUSE-ARGONNE BATTLES, THE. Marshal Foch, Commander-in-Chief of the Allied armies in the last days of September, 1918, continued the offensive against the German forces from Switzerland to the sea. In succession he dealt a heavy blow to the German flank in Flanders, struck at the enemy's center along the Hindenburg line and launched a formidable attack on his other flank in Champagne. It was of first importance that the flank in Champagne should be shattered, as it meant the cutting of the German lines of communication with France and Flanders. The breaking of the Meuse-Argonne line would probably lead to the collapse of the enemy, for it served as a hinge to the German retreat in France and Belgium.

The Germans held naturally strong positions which they had strengthened artificially in the most painstaking manner. Here they had concentrated a large force of their best troops. The Argonne Forest, the bend of the Aisne, and the Meuse river offered every advantage for defensive operations. The American Army occupied the lines between the Argonne Forest and the Meuse, joined with General Gouraud's French Army which extended almost to Rheims. Attacking on Oct. 6, the French Army made an advance of four miles and the Americans about six. In the course of two days' fighting the Americans captured Montfaucon, Cuisy, Malencourt, Epenonville, Charpentry, Very, and other towns and villages and 10,000 prisoners. The French won some strong points, including Navarin Farm.

To the east of the Meuse the Americans captured Marcheville and Rieville, important gains which straightened the flank of the army west of the river. General Gouraud in the meantime had advanced to within a few miles of Vouziers. The American drive had brought their guns within range of the Kriemhilde line, which ran from Grand Pre to Damvillers, crossing the Meuse river. Smashing through the German line, the Americans, capturing prisoners and guns, advanced several miles up the Aire river valley. General Gouraud attacking on a twelve-mile front drove the Germans before him and by Oct. 11 held the whole of Suippe river line, capturing in these operations 20,000 prisoners and 600 guns.

The Americans in the meantime had seized the heights dominating the Aire valley. Oct. 14-17 they captured Pre, Champigneulles, and Romagne, and had pushed on beyond the Kriemhilde position. Talma Farm and other strong points were won by surprise attacks. About the same time the French, crossing the Aisne, made important gains in the direction of Rethel. The principal German defense between the armies of Allies and the Belgian border was the Freya-Stellung line, extending from a point near the Meuse to the Bourgogne Forest. On Oct. 26 a part of the Freya line was won by the Allies and the great trunk railway line running from Metz to Mézières through Sedan and Montmédy was under bombardment.

General Gouraud's Army, the American co-operating, on Nov. 1 crossed the Aisne between Rethel and Vouziers, with General Berthelot on his left, and had pushed on to the suburbs of Mézières, when on Nov. 11 the Armistice ended the fighting. General Pershing's forces in the final drive reached Sedan on Nov. 6, and on the last day of the war had advanced east of the Meuse, capturing the Woevre Heights, which brought Metz within easy range of his guns.

The importance of the French and American drive in the Meuse-Argonne country cannot be over-estimated as it led to great results. The movement broke the German line of communications and hastened the German collapse which would have been far more complete if the Armistice had not put an end to hostilities. The French and American victories had not been lightly won, for the nature of the ground fought over offered every advantage for defense and the Germans had ample reasons for believing their positions were impregnable.

It has been variously estimated that the Germans lost between 100,000 and 150,000 men during the Franco-American offensive in the Meuse-Argonne region. The Americans captured 26,000 troops and 468 guns. The French took over 30,000 prisoners and about 700 guns.

MEXICAN WAR, a war between the United States and Mexico, growing out of the annexation of Texas in 1845. Texas claimed the Rio Grande as her N. W. frontier, while Mexico insisted on the Nueces river. The United States supported the position taken by Texas, and war between the two countries was declared in 1846. During that year Gen. Zachary Taylor won the battles of Palo Alto and Resaca de la Palma and forced Monterey to surrender. On May 23, 1847, he gained the victory of Buena Vista. In June of the same year General Scott took Vera Cruz and marched on to the City of Mexico. On the way he fought the battles of Cerro Gordo, Contreras, Churubusco, Molino del Rey, and Chapultepec. His capture of the

City of Mexico, Sept. 14, 1847, virtually ended the war, and the treaty of Guadaloupe-Hidalgo was signed Feb. 2, 1848.

MEXICO, a republic of North America; bounded on the N. by the United States; on the E. by the Gulf of Mexico and the Caribbean Sea; on the S. and S. E. by Guatemala and British Honduras; and on the W. and S. W. by the Pacific Ocean; area, 767,005 square miles; pop. about 16,000,000.

Topography.—For the most part Mexico consists of an immense tableland. The prevailing formations are metamorphic, but partly overlaid by igneous rocks of every geologic epoch, rich in metalliferous ores. In the highest ranges granites and other igneous rocks prevail, with deposits of sulphur and pumice, and other recent volcanic discharges. In the N. chalk and sandstones become prevalent. The most important range is the Sierra Madre (over 10,000 feet); parallel wth this run the sierras of the E. coast and of Lower California. The surface of the country is also much broken up by short cross-ridges and detached peaks, the principal being the Cordillera de Anahuac culminating in Nevado de Toluca (19,454 feet), the highest point on the North American continent, and Popocatepetl (17,523). The Pico de Orizaba, E. of Popocatepetl, is 18,205 feet high. On the Atlantic side the plateau descends abruptly to the narrow strip (about 60 miles) of gently sloping coast land; toward the Pacific, where the coast lands vary in width from 40 to 70 miles, the descent is more gradual. Of the present lakes the only one of great size is Chapala, which is traversed by the Rio Grande de Santiago; but considerable bodies of water collect in depressions in the uplands during the heavy rains. The rivers of Mexico are of little use for navigation. S. of the Rio Grande del Norte, on the Texan frontier, they are mostly impetuous mountain torrents, or flow through rocky gorges, sometimes 1,000 feet deep. Only in the narrow strips between the plateau and the coast are they available as channels of trade.

Climate.—In the plateau region the climate is almost that of perpetual spring, and the atmosphere is remarkably free from moisture, but so scarce is rain that plateau agriculture is largely dependent on irrigation. An immense desert tract extends from Chihuahua to Zacatecas. On the coast lands water is abundant, but the climate is so unhealthful that few white men can labor there.

Agriculture.—The total production of cotton in 1918 was 79,293 tons. Corn produced amounted to 1,128,570,535 kilograms. One of the most valuable products of Mexico is henequen, or sisal fiber. This is produced chiefly in Yucatan and this is the only important product of that province. It furnishes a large part of the material for binder twine throughout the world. The exports of this commodity amount to about 150,000 tons annually, with a value of $50,000,000.

Mineralogy.—The country is rich in minerals, many of which have been worked from an early date. Silver, especially, has been an important industry ever since the conquest. Gold is also produced. Copper is largely mined in some sections, being found in a pure state in Chiapas and Guanajuato, and elsewhere associated with gold. Other important minerals are iron, including enormous masses of meteoric iron ore. The mountain, Cerro de Mercado, a mile from Durango, is a solid mass of magnetic iron ore. Other mineral products are lead, sulphur, zinc, quicksilver, platinum, cinnabar, asphalt, petroleum, salt, marble, alabaster, gypsum and rock-salt.

Mineral Production.—Figures are incomplete for the production of metals in recent years. In 1918 the value of production was approximately as follows: Silver, 65,654,751 pesos; copper, 66,096,344 pesos; lead, 23,800,639 pesos; zinc, 9,036,233 pesos; gold, 3,244,781 pesos, and antimony, 2,407,147 pesos. Oil production has been the chief feature of the mineral production of Mexico for several years. The production of petroleum in 1918 amounted to 63,820,836 barrels, with an approximate production in 1919 of 80,000,000. Several rich deposits of petroleum were found during 1919.

Manufactures.—Till recent years very little manufacturing was done in Mexico, the number of factories using steam not greatly exceeding 100 prior to 1888. Cotton, woolen underwear, carpets, and cloths are now made in considerable quantities. There are also many cigar and cigarette factories, flour mills, distilleries, powder mills, soap factories, paper mills, tile factories, etc. The uncertainties in the country in the last decade has resulted in disturbance of industrial conditions. There has, however, been a steady increase in the importance of manufacturing. The indications are that Mexico would be an important industrial country when political conditions adjust themselves on a steady basis. During 1918-19 an industrial census was taken. The partial results of that census indicate 3,805 industrial establishments, divided as follows: food industry, 693; metals, 614; textiles, 213; elec-



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tric, 40; miscellaneous, 2,245. The capital involved was about 240,000,000 pesos and about 35,000 wage earners were employed.

Commerce.—Foreign trade with Mexico in 1918 amounted to $265,887,744, of which imports were valued at $82,235,019 and exports $183,652,725. By comparison with the figures of 1913 imports show a loss of about $15,000,000 and exports a gain of about $30,000,000. The most important imports were vegetable products, mineral products, and textiles. The chief exports were mineral products, including petroleum, which amounted in value to $106,966,171; vegetable products, and animal products. In 1919 the export of oil was estimated at about 80,000,000 barrels.

Transportation and Communication.—The constant series of revolutions and other disturbances has resulted in more or less demoralization of the railway systems of Mexico. Many of the railway lines will have to be rebuilt entirely and most of them repaired to a large extent before they reach a condition where transportation will be normal again. Heavy storms in the autumn of 1919 did severe damage to the railway lines. Many large bridges were swept away. The railway between the city of Durango and the port of Matazlan was almost completed at the end of the year 1919.

The merchant marine for 1919 had a tonnage of 40,257, and the vessels engaged in river trade had a tonnage of 366,726. The total railway mileage is about 16,000. There is a fairly complete system of telegraphs. There are about 50,000 miles of telegraph wires. The wireless system is in operation.

Education. — In its educational system, Mexico is far behind many of the other American countries. The great majority of the people are illiterate, and no serious attempt has been made by any of the rulers of the country to establish a complete estimate of schools. While in theory education is compulsory and free in the lower grades, no serious attempt is made to compel the Indian population to attend these schools. There are secondary schools, professional schools, and military and naval schools. The Mexican University, which was founded in 1553 and reorganized in 1910, forms the head of the educational system of the country. There are about 3,000 private and clerical schools. The total number of primer schools supported by the State governments and by municipalities is about 10,000, in which are about 700,000 pupils.

Religion.—The prevailing faith is Roman Catholic, which was the State religion till 1857. On Sept. 25, 1873, the government declared that it recognized no State religion.

Finances.—The disturbed condition of the country in recent years has produced demoralization in the financial system. The revenue for 1919 was about 150,000,000 pesos, and for 1920 about 160,000,000 pesos. The foreign debt, exclusive of interest, in 1918 amounted to 296,944,251 pesos and the internal debt to 138,795,550 pesos. The interest due on both debts amounted to 103,832,284 pesos, making the total for the entire debt about 530,000,000 pesos. A vast amount of paper money was put into circulation. President Carranza attempted to reorganize the finances during his rule and met with considerable success, as far as revenue was concerned. The greater part of the amount produced, however, was dispersed for the payment of the army and other large sums were absorbed by individuals, so that the country at large received small benefit.

Government.—The government of Mexico is that of a republic. A new constitution was promulgated on Feb. 5, 1917. The several States have absolute control of their internal affairs. The President, who is chosen every four years, and is now eligible to consecutive re-elections, is assisted by a cabinet of seven secretaries, viz.: Foreign Affairs; Interior; Justice and Public Instruction; Fomento, Colonization and Industry; Communications and Public Works; Finance and Public Credit; and War and Marine. The legislative power is vested in a Congress, composed of a Senate and House of Representatives. Representatives, whose terms are two years, are elected by popular vote on the basis of one representative for every 60,000 population. The Senate consists of 58 members, two from each State, and two from the Federal District, who serve four years, and are elected in the same manner as the representatives. The justices of the Supreme Court, which occupies the same position as that of the United States, are chosen by popular suffrage and serve for six years. There is one annual session of Congress.

History.—The history of ancient Mexico exhibits two distinct and widely differing periods—that of the Toltecs and that of the Aztecs. The 8th century is the traditional date when the Toltecs are related to have come from the N. Their capital was established at Tula, N. of the Mexican valley. Their laws and usages stamp them as a people of mild and peaceful instincts, industrious, active and enterprising. It is related that a severe famine and pestilence all but de-

stroyed the Toltec people in the 11th century, and near the end of the next century a fresh migration brought, among other kindred nations, the Aztecs into the land. Within two centuries and a half this last people had become predominant. But their rule was, in a great degree, a reversion to savagery.

The Aztecs founded, about 1325, the city of Tenochtitlan, or Mexico; a hundred years later they had extended their sway beyond their plateau valley, and on the arrival of the Spaniards, their empire was found to stretch from ocean to ocean. Their government was an elective empire, the deceased prince being usually succeeded by a brother or nephew, who must be a tried warrior; but sometimes the successor was chosen from among the powerful nobles. The monarch wielded despotic power, save in the case of his great feudal vassals; these exercised a very similar authority over the peasant class, below whom, again, were the slaves. The Mexicans apparently believed in one supreme invisible creator of all things, the ruler of the universe; but the popular faith was polytheistic. At the head of the Aztec pantheon was the frightful Huitzilopochtli, the Mexican Mars. In every city of the empire his altars were drenched with the blood of human sacrifice. The victims, usually prisoners of war, were borne to the summit of the great pyramidal temples, where the priests, in sight of assembled crowds, bound them to the sacrificial stone, and, slashing open the breast, tore from it the bleeding heart and held it up before the image of the god. In the years immediately preceding the Spanish conquest, not less than 20,000 victims were annually immolated, including infants, for the propitiation of the rain gods.

Cortez landed at Vera Cruz in 1519. Before his energy, and the superior civilization of his followers, the power of the native empire crumbled away. In 1540 Mexico was united with other American territories—at one time all the country from Panama to Vancouver's Island—under the name of New Spain, and governed by viceroys (57 in all), appointed by the mother country. The intolerant spirit of the Catholic clergy led to the suppression of almost every trace of the ancient Aztec nationality and civilization, while the commercial system crippled the resources of the colony; for all foreign trade with any country other than Spain was prohibited on pain of death. Mexico ranked first among all the Spanish colonies in regard to population, material riches, and natural products. In 1810 the discontent, which had been gaining ground against the viceregal power during the war of the mother country with Napoleon, broke into open rebellion under the leadership of a country priest named Hidalgo. After his defeat and execution in 1811, Morelos, another priest, continued the struggle till he shared the same fate in 1815; and a guerilla warfare was kept up until, in 1821, the capital was surrendered by O'Donoju (a Spaniard of Irish descent), the last of the viceroys. In the following year General Iturbide, who in 1821 had issued the plan de Iguala, providing for the independence of Mexico under a prince of the reigning house, had himself proclaimed emperor; but the guerilla leader Guerrero, his former ally, and Gen. Santa Ana raised the republican standard, and in 1823 he was banished to Italy with a pension. Returning the following year, he was taken and shot, and the federal republic of Mexico was finally established.

For more than half a century after this (till 1876), the history of Mexico is a record of nearly chronic disorder and civil war. In 1836 Texas secured its independence, for which it had struggled for several years, and which Mexico was compelled to recognize in 1845. In that year Texas was incorporated with the United States; but its W. boundary was not settled, and war ensued between Mexico and the United States (see MEXICAN WAR). From the fall of Santa Ana in 1855, down to 1867, great confusion prevailed.

In 1853 Benito Juarez became president, but his claims were contested by General Miramon, the head of the reactionary or clerical party, and the country was plunged in civil war. During this period of internal disorder, the Cortes passed an act suspending all payments to foreigners for two years, an act that drew upon the Mexican government the serious remonstrance of those European powers whose subjects had just cause of complaint; and the result was the dispatch of a fleet of English, French, and Spanish ships into the Mexican Gulf for the purpose of enforcing satisfaction. In 1861 the Spaniards disembarked a force at Vera Cruz; and this step was soon followed by the arrival before that city of the allied fleet. Preparations to advance at once upon the capital alarmed the provisional government, and brought about an armistice, with a view of negotiating a treaty for the future regulation of commercial intercourse between Mexico and the European powers. This treaty was drawn up and provisionally ratified by the different commanders, but was not con-

firmed on the part of France, and consequently the French troops retained occupation of Mexican territory after the Spaniards and English had declined to join in further hostile demonstrations. In April, 1862, Emperor Napoleon formally declared war against Mexico; but the French never met with the welcome they expected from the people and finally had to withdraw, without permanent success, in 1867, largely because of the attitude of the United States. MAXIMILIAN (*q. v.*), who had become Emperor of Mexico under French support, was executed in the same year, and Juarez returned to practically absolute power. On the death of Juarez in 1872, the chief justice, Lerdo de Tejada, assumed the presidency, in which, after a revolution, he was succeeded in 1876 by Gen. Porfirio Diaz, one of the ablest of Mexican soldiers and administrators, who was re-elected in 1884, 1888, 1892, 1896, 1900, and 1904.

Diaz remained president and practically dictator of Mexico until 1910. Dissatisfaction with his rule, however, had been steadily accumulating, and, when plans were made by his supporters in 1910 to re-elect him for another term of six years, opposition became pronounced. This was headed by Francisco I. Madero, a wealthy landowner of liberal ideas. He became a candidate against Diaz, but was arrested by the government on the eve of the election and was thus eliminated. Diaz was re-elected for his eighth term in July 26, 1910. His rule, however, was brief. Madero, on his release from prison, began an active propaganda and in November headed an outbreak at Chihuahua. The movement spread rapidly, and Diaz realized that his career as ruler of Mexico was over. Following a number of successes Madero entered the City of Mexico on June 7, 1911. Diaz in the meantime had signed a treaty providing for his resignation. Madero was chosen president and inaugurated on Nov. 6. His rule, however, was short-lived. Revolutions broke out in various parts of the country. The most serious of these was headed by Felix Diaz, a nephew of the former president. On Feb. 19, 1913, following a sharp struggle in the City of Mexico, having been deserted by his military commander, Victoriano Huerta, Madero was arrested and forced to resign. Four days later he was killed while being transferred from one prison to another. Huerta then became provisional president. No sooner had he taken office, when a counter-revolution, headed by Venustiano Carranza, governor of Coahuila, broke out. The revolt spread rapidly and Huerta's position was made more difficult by the fact that the United States Government refused to recognize him as president on account of charges that he had been responsible for the death of Madero. Huerta was elected president in October, 1916. President Wilson protested against the election and demanded the elimination of Huerta on the condition of resuming friendly relations with Mexico. His demand was ignored and Huerta's election was declared valid. The revolution of Carranza continued to spread. Francisco Villa assisted Carranza and captured Juarez and other large cities. At the beginning of 1914, the Constitutionalists, a name adopted by the Carranza party, held nearly all the northern States. The chief military leaders were Villa, Alvaro Obregon, and Pablo Gonzales. Their military successes continued. The situation of Huerta was made still more dangerous by the so-called Tampico incident. American marines at Tampico were arrested while landing from a launch flying the American flag. President Wilson demanded an apology which was refused. This resulted in the sending of American war ships to Vera Cruz, followed by a bombardment of the city, which was captured on April 21, 1914. War was averted only by the action of Argentina, Brazil, and Chile, who offered their services as mediators. Delegates met at Niagara Falls on May 20 and remained in session until June 24. A provisional arrangement was drawn up, but this provided no practical solution for the difficulties. Huerta resigned the presidency in the face of continued successes of the revolutionists, on July 15. After a brief interval, Carranza became provisional supreme ruler. Villa now turned upon Carranza, whom he denounced as a traitor and in the course of months Villa became the chief power in the country. Carranza had resigned and Villa was in virtual control. Various persons acted as nominal heads of the government, although Villa was the chief power. The Constitutionalist forces under General Obregon, however, were able to successfully oppose him and a decisive defeat was administered to Villa's army at Celaya, in April, 1915. Within a short time Villa had lost control of all except the extreme northern districts of Mexico. By the end of the year Carranza was again in supreme power and was recognized by the United States as head of the government.

On March 9, 1916, Villa, without warning, raided the town of Columbus in New Mexico, killing 18 persons, some of whom were United States soldiers who were

guarding the border. President Wilson at once organized a pursuit expedition under General Pershing, which proceeded over the border in spite of the protests of Carranza who demanded that the American troops be removed. The search for Villa was futile. In May and June occurred other raids upon American towns and the situation became so threatening that President Wilson called out practically all the State Militia for service on the Mexican border. Several clashes followed between American and Mexican troops. At Carrizal, on June 21, 1916, 12 American soldiers were killed and 24 wounded. Carranza expressed a desire for peace and asked for a conference. To this the President consented, and a commission consisting of three Mexicans and three Americans met in New London, Conn., on Sept. 6, 1916, and worked out a program which assured the withdrawal of the American forces from Mexico.

There now seemed promise of a period of peace. The Constitutional Convention met in February, 1917, to draft a new constitution. This contained many new and radical provisions and made especially stringent laws against the rights of foreigners in the country. The constitution was adopted in 1917, when Carranza was elected president. The internal affairs of the country remained in a continually troubled condition. Various revolutions broke out and at no time during Carranza's rule was there complete peace. At the outbreak of the World War Mexico was the field of strong pro-German propaganda. (See WORLD WAR.)

Villa, who had been little heard of since the raid on Columbus in 1917, began raiding the border anew in 1919. Many American citizens were killed by adherents of Villa and by those of Carranza as well. On Aug. 14, 1919, the American Government informed Mexico that immediate steps must be taken to protect American citizens. In the same month two American aviators had become lost while flying over Mexican territory and were seized and held for a ransom of $50,000. The men were released on the payment of the ransom. Another complication resulted from the seizure of William O. Jenkins, Consular Agent at Pueblo, by bandits, who asked a ransom of $150,000. The American Government demanded his release, but Mexico refused to take action. The ransom was finally paid. Late in 1919 a rebellion broke out headed by Gen. Felipe Angeles. General Angeles was captured and after court-martial was shot.

Carranza's position became ever more difficult. His former military leaders, Obregon and Gonzales, became candidates against him for the presidency in 1920. A revolution instigated by Obregon broke out in Sonora in April, 1920. This rapidly spread over the entire country until Carranza was obliged to flee from the capital, accompanied by a considerable military force. While attempting to reach Vera Cruz, this force was attacked and defeated by the revolutionists. Carranza fled with a small body of men, and while asleep in a small cabin at Tlaxcaltongo, was murdered on May 21, 1920. A few days later the troops of Obregon and Gonzales entered the City of Mexico in triumph. Obregon was now the most conspicuous candidate for the presidency and Gonzales professed his intention to withdraw. Both issued statements expressing their intention to strive to bring about friendly relations between Mexico and the United States. Adolfo de la Huerta was chosen provisional president in May, 1920. Villa threatened to become a disturbing factor on being refused what he considered proper recognition by the new government, but after conducting a short campaign consented, on the payment of a large sum of money and a grant of land, to refrain from any further military operations. General Obregon was elected president on Sept. 5, for six years, beginning Dec. 1, 1920.

MEXICO, a city and capital of the republic of Mexico, situated within the State of Mexico in the Federal District (463 square miles), about 7,400 feet above sea-level, near several lakes, and at about an equal distance from Vera Cruz on the Mexican Gulf, and Acapulco on the Pacific; is laid out with great regularity; principal public buildings the cathedral, one of the most sumptuous in America, about 500 feet in length, and 420 feet in width, forming one of the sides of the central square; palace of government; college of mines, a noble building, but now somewhat dilapidated; mint, with a front of 360 feet by 250 in depth; town house, has university, etc.; numerous convents, hospitals, churches, theaters, etc.; manufactures of comparatively limited extent, and trade mostly in the hands of foreigners. Mexico has a mild climate, and a pure and healthy atmosphere. It is on the site of the ancient city of Tenochtitlan, which was destroyed on the capture of Mexico by the Spaniards in 1521. The city suffered severely in the disturbances dating from the end of the Diaz régime, especially in the fighting between the forces of Felix Diaz and President Madero in 1913. See MEXICO. Pop. about 475,000.

MEXICO, county-seat of Audrain co., Mo., 50 miles N. E. of Jefferson City, on a tributary of the Salt river. Wabash and other railroads. Seat of Hardin College for Women. Commercial center of large stock-raising district. Has flour, carriage, cigar factories. Governed by mayor and council. Pop. (1910) 5,939; (1920) 6,013.

MEXICO, GULF OF, a basin of the Atlantic Ocean, closed in by the United States on the N., by Mexico on the W. and S., and its outlet on the E. narrowed by the jutting peninsulas of Yucatan and Florida, which approach within 500 miles of each other; length from S. W. to N. E. over 1,100 miles; area (est.) 716,200 square miles. Over a fourth of this area the ocean lies at a depth of between 1,000 and 2,000 fathoms, while 58,000 square miles is deeper still. The shores are very shallow, less than 100 fathoms deep over 400,000 square miles, etc. In the middle of the E. outlet is planted the island of Cuba, dividing the strait into two—the Strait of Florida and that of Yucatan, the former connecting the gulf with the Atlantic Ocean, the latter with the Caribbean Sea. Of the numerous bays, the largest is the Bay of Campeachy (Campeche). The coasts are mostly low and sandy or marshy, and are lined with numerous lagoons; the best of the few good harbors are those of New Orleans, Pensacola, Mobile, Tampa, Vera Cruz, Tampico, and Havana. The gulf is visited from September to March by violent N. E. gales called nortes. There are very few islands. The principal rivers it receives are the Mississippi and the Rio Grande del Norte. The GULF STREAM (*q. v.*) enters the Gulf of Mexico by the Strait of Yucatan, passes around it, and emerges through the Strait of Florida.

MEYER, BALTHASAR HENRY, American economist, born in Mequon, Wis. Studied at Berlin, Germany, and finished his education at University of Wisconsin. Taught sociology and political economy, then, in 1905, became chairman of Railroad Commission of Wisconsin. He was a member of the U. S. Railroad Securities Commission in 1910, and in 1911 was appointed member of Interstate Commerce Commission. He is the author of "Railway Legislation in the United States" (1903) and "A History of the Northern Securities Case" (1906).

MEYER, CONRAD FERDINAND (mī'er), a Swiss poet and historical novelist; born in Zurich, Switzerland, Oct. 12, 1825. His style is graceful, and he excels in character-drawing and in genre pictures of descriptive work. His chief novels are "Jürg Jenatsch" (1876), a story of Switzerland in the 17th century, and "The Saint" (1880); two of the best historical novels of modern German literature. His poetical works include: "Hutten's Last Days" (1872), in "Poems" (1882), and in "Engelberg" (1873). His works were collected in 8 vols. (1912). He died in 1898.

MEYER, GEORGE VON LENGERKE, American political leader. Born in Boston in 1858, he graduated from Harvard in 1879, and was then for twenty years in business as merchant and trustee. During part of this time he was on the Boston Common Council and Board of Aldermen, and in the Massachusetts House of Representatives, serving as Speaker, 1894-7. He was Ambassador Extraordinary and Plenipotientary to Italy 1900-5, and Ambassador to Russia, 1905-7. President Roosevelt made him Postmaster-General in 1907, and he was Secretary of the Navy under President Taft, 1909-13. He died in 1918.

MEYER, KUNO, a German scholar of Celtic literature. In 1894 he became professor of Teutonic languages at the University College, Liverpool, and in 1911 profesor of Celtic at Berlin. He founded a school in Dublin for the study of Celtic, and the Irish patriots, anxious to make it the language of Ireland, accepted him with enthusiasium. His important contributions to Celtic literature led to an invitation from Harvard to lecture there, which he finally declined because of the strong pro-Ally leaning of that institution.

MEYERBEER, GIACOMO (mī'er-bār), a German composer; born in Berlin, Prussia, Sept. 5, 1791. His genius showed itself so early that at six years of age he played at a concert, and at nine was one of the best pianists in Berlin. He was taught afterward by Clementi and the Abbé Vogler at Darmstadt. He subsequently visited Italy, and fell under the influence of Rossini, in imitation of whose style he composed several operas. The first work which made him a man of mark was the "Crusade in Egypt." It was produced at Venice in 1824, and at Paris two years later. Meyerbeer became the favorite composer of the Parisian public, whose taste he satisfied by the popular works which followed, and which are now well known throughout the world. "Robert the Devil" was produced at the opera of Paris in 1831; "The Huguenots" (1833); "The Prophet" (1849); "Star of the

North" (1854); and "Dinorah" (1859). He left the manuscript of another great opera, "L'Africaine" (The African Woman), which was produced in Paris in 1865. Besides his operas, Meyerbeer, wrote a "Stabat," a "Miserere," a "Te Deum," an oratorio, cantatas, and many songs. He was supreme in the French opera for more than 30 years, was associate of the Institute, and officer of the Legion of Honor, member of the Academy of Fine Arts at Berlin, and chapelmaster to the King of Prussia. He died in Paris, May 1, 1864.

MEYNELL, ALICE (THOMPSON) (mā'nel), an English author; born in London, England, about 1853. She spent much of her childhood in Italy, and married (1877) Wilfrid Meynell, editor of "Merry England." She wrote "Preludes" (1875; 2d ed. 1893), illustrated by her sister, Lady (Elizabeth) Butler; "Rhythm of Life" (1893); "The Children" (1896); "The Spirit of Place" (1898); "Collected Poems" (1913); "Essays" (1914); etc.

MEZEREON (-zē're-on), *Daphne Mezereum*, a small shrub with deciduous obovate or spatulate lanceolate leaves; flowers generally in threes; silky-pink, or white; very fragrant. Berries red, ovoid. Acrid and poisonous; the berries are cathartic; the leaves used as a vesicant.

MÉZIÈRES (mā-zyar'), the capital of the French department of Ardennes, on a bend of the Meuse, opposite Charleville, and 155 miles N. E. of Paris; principal building the flamboyant church, restored in 1884, in which Charles IX. was married in 1570. Strongly fortified by Vauban, and protected by a citadel, in 1521 it was successfully defended by the Chevalier Bayard, with 2,000 men, against 40,000 Spaniards under Charles V.; in 1815 held out for two months against the Allies, who besieged it after the battle of Waterloo; and in the Franco-German war of 1870-1871 capitulated after a frightful bombardment. Again, during the World War, the town and its vicinity was the scene of much and heavy fighting. Pop. about 11,000.

MEZZANINE, a low story between two higher ones, especially between the ground floor and the story above it.

MEZZOTINT (met'sō-), a process of engraving on copper or steel. The smooth plate is abraded with a roughened file-like tool, and myriads of tiny points are raised over the surface of the plate. These points catch and hold the ink, and an impression taken from a plate in this condition would give a soft velvety mass of black without variety of light shade. A burnisher is next used to get rid of the raised points where half tones and lights are wanted. Sometimes where very brilliant lights are required, they are cut away so as to insure a smooth surface of copper. By means of this burnishing process, all gradations of light and shade are obtained from the white of the smooth copper to the black of the roughened plate. The process dates from about the middle of the 17th century.

MIAMI (mī-am'i), a river rising in Hardin co., O.; flowing a general S. W. and S. course through Logan, Shelby, Miami, Montgomery, Butler, and Hamilton counties, and entering the Ohio river at the extremity of the State. It is about 140 miles long. The Miami and Erie canal runs alongside the river between Piqua and Hamilton.

MIAMI, a town of Arizona, in Gila co. It is on the Arizona Eastern railroad, and is the center of a rich copper mining district. Water power is derived from the Roosevelt Dam, 40 miles distant. Pop. (1920) 6,689.

MIAMI, a county-seat of Dade co., Fla., 366 miles S. of Jacksonville, at the mouth of the Miami river, on the Florida East Coast railroad. Popular winter resort, steamers running between it and Havana. Situated in great fruit-growing country, and has several canneries. Pop. (1910) 5,471; (1920) 29,571.

MIAMI, a city of Oklahoma, in Ottawa co. It is on the St. Louis and San Francisco, the Missouri, Oklahoma, and Gulf, and the Oklahoma, Kansas, and Missouri Interurban railroads. It is the center of an important lead and zinc mining region. Lumbering is also an important industry, and the agricultural interests are important. It was the first town in the former Indian Territory, built on land set apart for town purposes, by act of Congress. Pop. (1910) 2,907; (1920) 6,802.

MIAMI UNIVERSITY, an institution founded in 1809 at Oxford, O. Coeducational. In 1918 the students numbered 765 and the faculty 55. The State of Ohio granted land to the University at its start and has since granted appropriations. The present endowment is $104,000 and the income about $300,000. The grounds and buildings are valued at over a million dollars. The library contains 49,000 volumes.

MICA, a name originally given to the shining, scaly constituent of many rocks


MICHIGAN
SCALE OF STATUTE MILES
0 5 10 20 30 40 50 60
SCALE OF KILOMETERS
0 10 20 30 40 50 60 70 80
Places of 100,000 and over....Detroit
" " 10,000 to 100,000....Jackson
" " 5,000 to 10,000....Holland
County Towns
Railroads
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
LAKE ERIE
NORTHWEST PART OF MICHIGAN
Same scale as main map
DOMINION OF CANADA
PROVINCE OF ONTARIO
MICHIGAN
Calumet
Houghton
Hancock
Marquette
Escanaba
Ishpeming
Negaunee
Menominee
Iron Mountain
Kingsford
Manistique
Newberry
Sault Ste. Marie
Mackinac Island
Cheboygan
Petoskey
Harbor Springs
Charlevoix
Boyne City
Gaylord
Alpena
Traverse City
Frankfort
Manistee
Ludington
Big Rapids
Mt. Pleasant
Saginaw
Bay City
West Bay City
Midland
Alma
Muskegon
Grand Haven
Grand Rapids
Holland
Kalamazoo
Battle Creek
Jackson
Ann Arbor
Detroit
Monroe
Benton Harbor
St. Joseph
Niles
Chicago
Milwaukee
Green Bay
Sheboygan
Port Washington
Manitou I.
Beaver I.
Fox I.
Washington I.
Detour
Drummond I.
Mackinac I.
Bois Blanc I.
Bois Blanc
Presque Isle
Thunder Bay
Au Sable
Oscoda
Iosco
Arenac
Gladwin
Clare
Osceola
Lake
Oceana
Newaygo
Mecosta
Isabella
Midland
Bay
Gratiot
Montcalm
Ionia
Kent
Ottawa
Allegan
Barry
Eaton
Clinton
Shiawassee
Genesee
Lapeer
St. Clair
Lenawee
Monroe
Hillsdale
Branch
St. Joseph
Cass
Berrien
Van Buren
Calhoun
Jackson
Washtenaw
Wayne
Livingston
Oakland
Macomb
Huron
Sanilac
Tuscola
Saginaw
Bay
Arenac
Iosco
Alcona
Ogemaw
Roscommon
Crawford
Otsego
Montmorency
Alpena
Presque Isle
Cheboygan
Emmet
Charlevoix
Antrim
Leelanau
Grand Traverse
Benzie
Manistee
Wexford
Missaukee
Kalkaska
Lake
Mason

and earths. The great diversity of chemical composition and other characters led to its division into several species, which were supposed to have distinctive crystallographic and chemical characters. The word is now used to designate a group of minerals having certain characters in common, the most important of which is the eminently perfect basal cleavage, which affords very thin, tough, and shining laminæ.

MICAH, the name of various persons spelled Micah, Michah (I Chron. xxiv: 24, 25), or Micha (II Sam. ix: 12) mentioned in the Old Testament. Specially: The prophet called Micah the Morasthite. Morasthite means of Moresheth, probably Moresheth-gath (Micah i: 14). Scarcely anything is known of him, except what may be gathered from his prophecies.

In the Old Testament canon: The 6th in order of the "minor prophets," i. e., of the minor prophetic books. The most natural division of the book is into three sections, ch. i.-ii., iii.-v., and vi.-vii., each beginning with a formula calling on the people to hear (i: 2, iii: 1, vi: 1). Passages in Micah resemble others in Isaiah (see Micah iv: 1-5 and Isa. ii: 1-5). Micah is quoted or alluded to in Matt. ii:5, 6; x: 35, 36; Mark xiii: 12; Luke xii: 53; John vii: 42. The canonical authority of the book has never been doubted.

MICA SCHIST (shist), or **MICA SLATE**, a slaty metamorphic rock composed of mica and quartz. The mica is usually muscovite (potash mica), though sometimes it is biolite (magnesian mica). The rock usually splits along the micaceous folia. Occasionally mica seems to constitute the whole mass of the rock. Next to gneiss, mica schist is the most common metamorphic rock.

MICE. See MOUSE.

MICHAEL, the name of several emperors of Constantinople. MICHAEL I. succeeded to the throne in 811, abdicated, on occasion of a military sedition, in favor of Leo the Armenian, 813. Died in 846. MICHAEL II. succeeded Leo the Armenian, 820; died in 829. MICHAEL III. succeeded in the third year of his age, 842, under the guardianship of his mother, Theodora. In 866 he made Basil, the Macedonian, his associate in the empire, who killed him in 867. MICHAEL IV. was raised to the throne by Zoe, after she had poisoned her husband, Romanus Argyrus, 1034. He died in 1041. MICHAEL V., nephew of the preceding, occupied the throne a few months after his death, and was dethroned by Zoe and Theodora, 1042. MICHAEL VI. succeeded Theodora in 1056, and was dethroned by his officers, who elevated Isaac Comnenus to the imperial dignity in 1057. MICHAEL VII., son of Constantine Ducas and Eudoxia, succeeded his father, 1067; and being dethroned by Nicephorus Botoniates in 1078, retired to a monastery, and died Archbishop of Ephesus. MICHAEL VIII., surnamed Palæologus, regent of the empire during the minority of John Lascaris, whom he deprived of his eyes and throne in 1260, and in the following year took Constantinople. He died in 1288.

MICHAEL ANGELO. See ANGELO.

MICHELET, JULES (mēsh-lā), a French historian; born in Paris, France, Aug. 21, 1798. After the revolution of 1830 he was appointed chief of the historical section of the archives of France, and in 1838 became Professor of History at the College of France and an Academician. He lost all his offices at the coup d'état in 1851. His principal historical works are: "History of France" (21 vols. 1833-1875); "Roman History"; "The Beginnings of French Law"; and others of less importance. Several of his works on social subjects deserve mention: "On the Jesuits" (1843), written in collaboration with Edgar Quinet; "Woman, Priest, and Family" (1844); "The People" (1846). About 1856 he turned into another path, and wrote and published works on natural history and philosophy. A collection of his works was begun in 1895. He died in Hyères, France, Feb. 5, 1874.

MICHELSON, ALBERT ABRAHAM, scientist. Born in Strelno, Germany, in 1851, was brought to San Francisco when young, and in 1873 graduated from the U. S. Naval Academy. He taught physics at Annapolis and then pursued his studies in Europe, and on his return became professor of physics at the Case School, Cleveland, and in 1892 head of the physics department, University of Chicago. His experiments in the determination of the velocity of light began in 1878, and to this end he invented the interferential refractometer, which was followed by the echelon spectroscope. President of the American Physical Society (1901-1902) and of American Association for Advancement of Science (1910). Many honorary degrees from universities.

MICHIGAN, a State in the North Central Division of the North American Union; bounded by Lake Superior, Lake Michigan, Lake Huron, Ohio, Indiana, Wisconsin, and Ontario; counties, 83; area, 57,430 square miles; pop. (1890) 2,093,889; (1900) 2,420,982; (1910) 2,-

810,173; (1920) 3,668,412; capital, Lansing.

Topography.—The State is divided by the Great Lakes into two peninsulas, the lower of which occupies nearly two-thirds of the land area. The surface of the S. peninsula is generally level, broken by conical hills rising to an altitude not exceeding 200 feet. It is divided by a low watershed running N. and S., the larger portion of the State being on the W. of this and gradually sloping toward Lake Michigan. The N. peninsula is mountainous; the Porcupine range, rising to an altitude of 2,000 feet above the sea, forming the watershed between the streams flowing into Lake Superior and Lake Michigan. The surface on either side of this range is rugged. There are numerous lakes and marshes in both peninsulas, and the coast is much indented. Keweenaw, White Fish, and the Big and Little Noquette bays are the principal indentations on the N., while the Grand and Little Traverse, Thunder and Saginaw bays indent the S. peninsula. The State has numerous large islands, the principal ones being the Manitou, Beaver and Fox groups in Lake Michigan; Isle Royale, and Grande Isle, in Lake Superior; Marquette, Bois Blanc, and Mackinaw in Lake Huron; and Nebish, Sugar, and Drummond Islands in St. Mary's Strait. The rivers are small, short and shallow, and but few are navigable. The principal ones include the Au Sable, Thunder Bay, Cheboygan, and Saginaw, flowing into Lake Huron; Ontonagon, and Tequamenon into Lake Superior, and the St. Joseph, Kalamazoo, Grand, and Escanaba into Lake Michigan.

Geology.—The geological formation of the State is greatly varied. Primary boulders are found over the entire surface, the N. part being principally of primitive origin, while Secondary deposits cover the entire S. peninsula. The upper peninsula exhibits Lower Silurian sandstones, limestones, copper and iron bearing rocks, corresponding to the Huronian system of Canada. The central portion of the S. peninsula contains coal measures and rocks of the permo-Carboniferous period. Devonian and sub-Carboniferous deposits are scattered over the entire State.

Soil.—The soil is of a varied composition and in large areas is very fertile, especially in the S., but the N. peninsula for the most part is rocky and mountainous and the soil unadapted to agriculture. The climate is tempered by the proximity of the lakes and is much milder than in other localities with the same latitude. The principal forest trees include basswood, maple, elm, sassafras, butternut, walnut, poplar, hickory, oak, willow, pine, birch, beech, hemlock, witch-hazel, tamarack, cedar, locust, dogwood, and ash.

Mineral Production.—Michigan is one of the great mineral producing States. It excels chiefly in the production of copper and iron. In the production of copper it ranks third, being exceeded only by Arizona and Montana. The smelter output of copper in the State in 1918 was 231,096,158 pounds. The production of copper began in the State before the first visits of European explorers. The commercial production dates from 1845, since which time copper has been steadily produced in increasing quantities. The production of copper is limited to the Keweenaw or Lake Superior district. The iron ores of the State are hematites. The production is in four regions, the Marquette, Menominee, Gogebic, and Vermilion. The shipments of iron ore in 1918 amounted to 17,587,416 tons and was valued at $65,900,501. This was a slight decrease from the production of 1917. In the production of iron ore, Michigan is exceeded only by Minnesota. Coal is also produced in large quantities. The production in 1918 was 1,385,000 tons. Coal is obtained almost entirely from the lower peninsula. Michigan is among the first of the States in the production of cement. There was produced in 1918 3,618,088 tons, valued at $6,078,167. Other important mineral products are salt, clay products, and stone products.

Agriculture.—The soil of S. Michigan is especially adapted to fruit and berry growing; grapes, cranberries, cherries, strawberries, apples, pears, peaches, and plums are raised to a large extent. The figures for production of the principal crops in 1919 were as follows: corn 64,350,000 bushels, valued at $88,803,000; oats, 36,875,000 bushels, valued at $26,181,000; rye, 13,500,000 bushels, valued at $17,280,000; hay, 3,180,000 tons, valued at $74,412,000; potatoes, 28,688,000 bushels, valued at $38,729,000; barley, 5,200,000 bushels, valued at $6,278,000; wheat, 20,237,000 bushels, valued at $42,497,000.

Banking.—On Oct. 31, 1919, there were reported 110 National banks in operation, having $19,205,000 in capital; $11,597,338 in outstanding circulation; and $11,037,450 in United States bonds. There were also 511 State banks, with $39,114,000 capital, and $25,233,000 surplus; 70 private banks, with $752,000 capital, and $204,000 surplus; and 8 trust and loan companies with $4,200,000 capital and $3,217,000 surplus. The exchanges for the year ending Sept. 30, 1901, at the United States Clearing House at Detroit amounted to $4,032,443,000, an increase

over those of the preceding year of $1,084,090,000.

Manufactures.—Michigan is one of the great industrial States. The last decade has witnessed a remarkable development in a number of the larger cities, notably Detroit, where the automobile industry has become one of the greatest in the world. Other cities of the State have shared in the increased industrial production. There were, in 1914, 8,724 industrial establishments, in which were engaged 320,611 persons. Wage earners numbered 271,090. The capital investment amounted to $869,043,000. The value of the materials used in manufacturing was $592,801,000. The value of the finished products was $1,086,162,000.

Education.—In 1917 there were in the State 892,888 children of school age. The enrollment in the public schools was 662,452, of whom 86 per cent. attended school There were 3,084 men and 18,908 women teachers. The average monthly salary for men teachers was $103 monthly and for women teachers $64 monthly. There was expended for public education $27,549,985. There are four State normal schools. Among the institutions of higher education are the University of Michigan, the Michigan Agricultural College, Adrian College, Hope College, Hillsdale College, Olivet College, and the University of Detroit.

Churches.—The strongest denominations in the State are the Roman Catholic; Methodist Episcopal; Regular Baptist; Lutheran; General Conference; Lutheran, Independent Synods; Presbyterian; Congregational; Protestant Episcopal; Reformed; German Evangelical Synod; and United Brethren.

Railroads.—The railroad mileage of the State in 1919 was 8,907. For several years there has been practically no construction of new lines.

Finance.—The total receipts for the fiscal year ending June 30th, 1918, was $26,152,138, and the expenditures were $26,551,763. There was a balance on hand at the end of the year of $13,159,742. The bonded debt amounts to about $7,000,000.

Charities and Corrections.—The charitable and correctional institutions are governed by boards appointed by the Government and Senate. These include hospitals at Kalamazoo, Pontiac, Traverse City, Newberry, and Ionia. There is an industrial school for boys at Lansing and industrial school for girls at Adrian, and a farm colony for epileptics at Wahjamega.

State Government.—The governor is elected for a term of two years. Legislative sessions are held biennially beginning on the first Wednesday of January, and are unlimited as to length of session. The legislature has 32 members in the Senate and 100 in the House. There are 13 Representatives in Congress. The State government in 1920 was Republican.

History.—This region was first visited by Jean Nicolet in 1634, at Sault Ste. Marie, at which locality Father Marquette made the first permanent white settlement in 1668. French settlements were also made at Mackinaw and Green Bay, and in 1701 Detroit became the seat of a French colony under Cadillac. The country passed to the English at the end of the French and Indian War, and during the war of the Indians under Pontiac for the extermination of the whites the garrison of Mackinaw was butchered and Detroit suffered a long siege. The country was held by the English after the close of the Revolution, being delivered to the Americans in 1796. Michigan became a portion of the Northwestern territory, and in 1802 was annexed to the Territory of Indiana. On Jan. 11, 1803, it was set aside as a separate Territory. It suffered severely during the War of 1812, Detroit and Mackinaw being captured by the British, and the Territory held till the successes of the Americans in 1813. In 1818, all the region N. of Illinois and Indiana was incorporated with Michigan. In 1823, the legislative power was transferred, by Act of Congress, from the governor and judiciary to a council of nine persons selected by the President from 18 nominees by the citizens at large; and the judicial term was reduced to four years. In 1825 the council was increased to 13 members, selected as before. Michigan was admitted into the Union as a State, Jan. 26, 1837, and in 1838 the capital was removed from Detroit to Lansing.

MICHIGAN AGRICULTURAL COLLEGE, a coeducational non-sectarian institution in East Lansing, Mich.; founded in 1857; reported at the close of 1918: Professors and instructors, 161; students, 1,140; volumes in the library, 43,000; president, Frank S. Kedzie, Sc. D.

MICHIGAN CITY, a city in Laporte co., Ind., on Lake Michigan, and on the Père Marquette, the Chicago, Indianapolis and Louisville, the Lake Erie and Western, and the Michigan Central railroads; 56 miles E. of Chicago. Here are the Northern Indiana State Prison, a United States life-saving station, public library, waterworks, street railroad and electric light plants, public and parochial schools, National and State banks, and several daily and weekly newspapers. It

has large interests in lumber, iron ore, and salt, and manufactures cars, chairs, etc. It has an outer or refuge harbor created by the Federal Government. Pop. (1910) 19,027; (1920) 19,457.

MICHIGAN COLLEGE OF MINES, a mining school at Houghton, Mich., part of the University of Michigan, founded in 1885. In the college there are 157 students with a faculty numbering 26. Nine college buildings make the physical basis of the institution, one of which is a library containing 30,000 volumes. Its entire support is the appropriation granted by the State of Michigan.

MICHIGAN, LAKE, one of the great fresh-water lakes between the United States and Canada, being the second largest lake in the world, Lake Superior being the largest. Unlike the other four big lakes, it lies wholly within United States territory. It is 320 miles long and averages 75 miles in width. Its surface is 581 feet above sea-level.

MICHIGAN, UNIVERSITY OF, a co-educational non-sectarian institution in Ann Arbor, Mich.; founded in 1837; reported at the close of 1919: Professors and instructors, 500; students, 7,000; volumes in the library, 413,666; endowment funds, $1,393,304; grounds and buildings valued at $8,075,660; income, $1,393,304; number of graduates, 36,789; president, Harry B. Hutchins.

MICHOACAN (mē-chō-ä-kän'), one of the States of Mexico, on the Pacific Coast; area 22,874 square miles; pop. about 1,000,000. It is to a large extent elevated and mountainous, among the mountains being the volcano of Jorullo; has rich mines of gold, silver, and other minerals. Capital Morelia; pop. about 40,000.

MICMACS, a tribe of Algonquin Indians, the first with whom the English came in contact in America; they remained hostile to the English and their colonies till 1760. They number from 3,000 to 4,000, and are mostly in Nova Scotia, Prince Edward Island, Cape Breton Island, Newfoundland, and New Brunswick.

MICROBES. See BACTERIA.

MICROCOSM and MACROCOSM. The belief of the ancients that the world or cosmos was animated, or had a soul, led to the notion that the parts and members of organic beings must have their counterparts in the members of the cosmos. The natural philosophers of the 16th century—Paracelsus at their head—took up this notion anew in a somewhat modified shape, and considered the world as a human organism on the large scale, and man as a world, or cosmos, in miniature; hence they called man a microcosm (Greek, "little world") and the universe itself the macrocosm ("great world"). With this was associated the belief that the vital movements of the microcosm exactly corresponded to those of the macrocosm, and represented them as it were in copy. From this it was an easy transition to the further assumption, that the movements of the stars exercise an influence on the temperament and fortunes of men. See ASTROLOGY.

MICROMETER (-krom'-), **an instrument** used with a telescope or microscope to measure small distances, or the apparent diameters of objects which subtend very small angles. Micrometers are variously constructed. The field of the telescope may be provided with a graduated scale, or a metallic ring, or a diaphragm having parallel and intersecting spider-lines or fine wires. The micrometer with a graduated scale is used for measuring distances by direct comparison.

MICRO-ORGANISM, any microscopic being of the animal or vegetable kingdom. See BACTERIA.

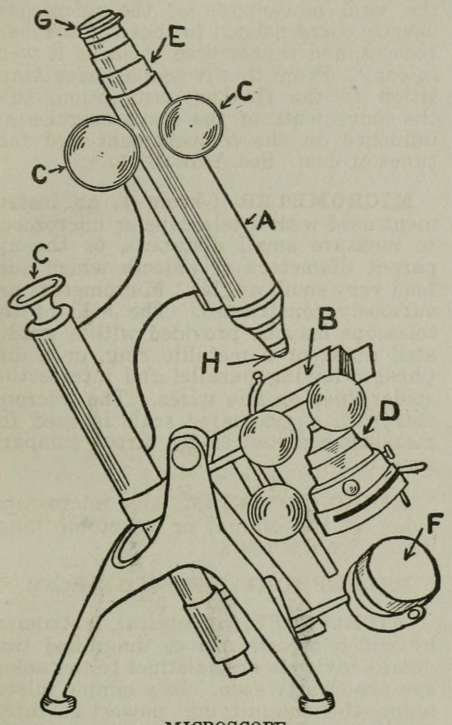
MICROPHONE. See TELEPHONE.

MICROSCOPE, an optical instrument by which objects are so magnified that details invisible or indistinct to the naked eye are clearly seen. In a simple microscope the magnifying power is interposed directly between the eye and the object, in the manner of a magnifying glass; and though the power may consist of several lenses, they combine as one; a triple set, of which either lens can be used singly, or any two, or all in combination, is usual. In a compound microscope, an aërial magnified image of the object is projected by one lens in the manner of a magic lantern, and this image is looked at and further magnified by a second power as in the simple microscope.

MICROSCOPY, CLINICAL, the employment of the microscope to detecting pathological and physiological conditions. It has become one of the most important departments of medical science, and has been especially valuable in the discovery of the bacilli of diseases, heretofore considered almost incurable. The most common form of microscopic examination is the blood test. The greatest strides in medical therapeutics in the

past generation have resulted from the employment of the microscope.

MIDAS (mī'das), in Greek legend, a King of Phrygia, son of Gordius and Cybele, and pupil of Orpheus. For his kindness to Silenus he was promised by Dionysus whatever he should ask, and in



MICROSCOPE

A. Body
B. Stage
C. Adjustments
D. Substage containing Condenser, Diaphragm, Stops, and Color Screens
E. Drawtube
F. Mirror
G. Eyepiece
H. Objective

his folly he asked that everything he touched should become gold; but, as the very food he touched was at once changed into gold, he was soon fain to implore the god to take back his fatal gift. He was told to bathe in the sources of the Pactolus, and from that day to this its sands have yielded grains of gold. There are also several other legends concerning him.

MIDDELBURG, capital of the Dutch province of Zealand, on the island of Walcheren, 4½ miles N. E. of Flushing. In former times it was one of the leading mercantile cities of the United Provinces, sending many ships to the East and West Indies, and the Levant (Thomas Cromwell was one of its merchants); but its commercial importance has greatly declined. Pop. about 20,000.

MIDDLE AGES, a term rather indefinitely used with reference to different nations. Hallam applies it to the period from the invasion of France by Clovis, A. D. 486, to the invasion of Naples by Charles VIII., in 1495. In England it may be considered as representing the interval between the Saxon invasion, A. D. 449, and the accession of Henry VII., 1485. Generally it may be considered as the period of time connecting what are called the ancient and modern periods of history, and extending from the decline of the Roman empire till the revival of letters in Europe. The epithet of the Dark Ages was frequently applied to the earlier portion of the period.

MIDDLEBORO, a town in Plymouth co., Mass.; on the Nemasket river, and on the New York, New Haven, and Hartford railroad; 35 miles S. of Boston. It is one of the oldest towns in Plymouth county, having been incorporated June 1, 1669, and has many points of historic interest. The town includes the villages of North Middleboro, Four Corners, Nemasket, Puddingshire, Tack Factory, Thomastown, Waterville, the Green, South Middleboro, Rock, and Eddyville. There are gas and electric light plants, owned by the town, a high school, National and savings banks, and weekly newspapers. It has manufactories of shoes, straw goods, open grates, and woolen goods, besides sawmills, iron foundry, marble works, etc. Pop. (1910) 8,214; (1920) 8,453.

MIDDLEBURY COLLEGE, a non-sectarian institution of Middlebury, Vt., established in 1800. In 1883 women were admitted to the college, but later in 1905 a separate college was opened for them apart from the original college. The combined institution has about 150 students and a faculty of 30. The courses are the regular ones offered in the arts and science departments of American universities. The library has about 30,000 volumes. The endowment fund is $400,000 and the income about $40,000.

MIDDLESBORO, a city of Bell co., Ky., 64 miles N. E. of Knoxville, Tenn., near the Tennessee boundary line, on the Louisville and Nashville, and the Southern railroads. Is a favored resort of summer visitors, and has large hospital and city buildings. Coal, iron industries and attractive schools. Pop. (1910) 7,305; (1920) 8,041.

MIDDLESBROUGH, a manufacturing town, port and municipal and parliament-

ary borough of England, in the North Riding of Yorkshire. Has numerous blast-furnaces and rolling mills, foundries, engineering works, ship yards, nail works, bolt and nut works, etc.; salt is being extensively worked, there being a thick bed of rock salt at a depth of 1,300 feet. Its rapid growth has been due to its suitability as a port for the Durham coal-fields, and to the smelting of iron ore abounding in the adjacent Cleveland Hills. The borough was incorporated in 1853, and returns one member to Parliament. Pop. (1917) 119,251.

MIDDLE STATES, New York, New Jersey, Pennsylvania, and Delaware, in allusion to the fact that at the time of the adoption of the Constitution they were the central commonwealths of the federation.

MIDDLETON, THOMAS, an English dramatist; born in London (?), about 1570. He collaborated with Rowley, Massinger, Fletcher, and Ben Jonson. He wrote: "A Mad World, My Masters" (1608); "The Game of Chess" (1623); "The Spanish Gipsy" (1653); "Women Beware Women" (1657). He died in Newington Butts, in 1627.

MIDDLETOWN, a city and county-seat of Middlesex co., Conn., on the Connecticut river, and the New York, New Haven, and Hartford railroad; 15 miles S. of Hartford. It is the seat of WESLEYAN UNIVERSITY (*q. v.*), the State Industrial School for Girls, the Berkeley Divinity School, and a State Insane Asylum; contains the county court house, National and savings banks, and the Russell Public Library; and has electric light and street railroad plants, improved waterworks, and manufactories of ship hardware, elastic webbing, rubber goods, pumps, hammocks, sewing machines, etc. Middletown was incorporated in September, 1651. Pop. (1910) 11,851; (1920) 13,638.

MIDDLETOWN, a city in Orange co., N. Y., on the Wallkill river, and on the Erie, New York, Ontario and Western, and the Middletown and Unionville railroads; 66 miles N. W. of New York City. There are a Union School, Middletown Academy, the Thrall Public Hospital, the State Asylum for the Insane, waterworks, public library, National banks, and several daily and weekly newspapers. The city is the center of a large country trade in live-stock and garden produce. Here are located the machine shops of the New York, Ontario and Western railroad, and there are manufactories of woolen hats, wood type, shirts, blankets, files, saws, sheet steel, condensed milk, etc. Middletown was chartered as a city in 1888, up to which year it was a part of Wallkill township. It was important in the early history of New York as a half-way station on the old Minisink road, which ran from the Hudson to the Delaware river, and was much used by emigrants on their way to western New York. Pop. (1910) 15,313, (1920) 18,420.

MIDDLETOWN, a city in Butler co., O.; on the Miami river, the Miami and Erie canal, and the Cincinnati, Hamilton and Dayton, the Cleveland, Cincinnati, Chicago and St. Louis, the Cincinnati Northern and other railroads; 34 miles N. of Cincinnati. Here are waterworks on the Holly system, and electric street railroad, electric lights, National and private banks, and several daily and weekly newspapers. The city has manufactories of paper, tobacco, bicycles, motor cycles, gas engines, and agricultural implements. Pop. (1910) 13,152; (1920) 23,594.

MIDDLETOWN, a borough in Dauphin co., Pa.; on the Susquehanna river, and on the Philadelphia and Reading, and the Pennsylvania railroads; 10 miles S. E. of Harrisburg. It contains the Emaus Orphan Home, waterworks, a high school, National banks, daily and weekly newspapers, and an electric road connecting it with Harrisburg. It is located in an agricultural and lumbering region, and has extensive iron works, planing mills and sash factory, car works, tannery, a furniture factory, etc. Pop. (1910) 5,374; (1920) 5,920.

MIDI (mē-dē'), **CANAL DU**, or **CANAL DU LANGUEDOC**, a canal from Toulouse on the Garonne to Cette on the Mediterranean. It is 150 miles long and was built in 1681 at a cost of $3,500,000. It connects the Atlantic with the Mediterranean Sea.

MIDSHIPMAN, in the United States navy, the naval cadet whose duty it formerly was to render such service as was required of him by the various officers on the ship, such as carrying messages, etc. He receives instruction, literary and professional, and his special duties are to pass on the orders of the superior officers to the men, and to superintend the carrying out of them. In zoölogy, an American sea fish allied to the toad fish.

MIDSUMMER DAY, the feast day of the nativity of St. John the Baptist, and commonly reckoned to be June 24.

MIGNONETTE (min-yon-et'), *Reseda odorata*, a well-known and highly fra-

grant flower, indigenous in northern and northeastern Africa. There is an Egyptian variety called tree mignonette.

MIGRATION, in zoölogy, ornithology, etc., a term applied to the periodical or irregular movements of all animals, especially to those of birds and fishes, for though the movements of some mammals correspond in some degree to those of birds, they are rather incursions than true migrations. Most of the birds that spend their spring and summer in the temperate parts of the United States pass the winter in the far S.; the winter visitants pass the summer in the extreme N., some of them breeding in Greenland, Lapland, or Iceland. Many sea fishes migrate to a limited extent for the purpose of depositing their spawn in favorable situations.

In botany, many seeds have downy or feathery appendages which when the wind blows influence their motion through the air; others are floated down rivers and the ocean casts them on distant shores.

MIGUEL (mē-gel'), **MARIA EVARISTO, DOM**, Duke of Braganza, and so-called King of Portugal; born in Lisbon, Portugal, Oct. 26, 1802; son of John VI. At six years of age he emigrated with the royal family to Brazil, and when his father succeeded to the throne in 1821, Miguel rebelled three times against him, and was banished. On the death of John, in 1826, Miguel was made regent. He seized the throne to which Maria da Gloria was heir. A revolution broke out and Dom Miguel after defeat was compelled to sign, in 1834, a capitulation and return to Portugal. He died at Brombach, Baden, Nov. 14, 1866.

MIKADO (mē-kä'dō) (Japanese=the exalted), poetic title of the Emperor of Japan. Yoshihito, the present ruler, is the 122d or 124th of his line, founded about 660 B. C. Seven of the mikados were women.

MIKKELSON, EJNAR, Danish explorer; born in Jutland in 1880. He served in the Amdrup expedition to Christian XI. Land in 1900 and in the Baldwin-Ziegler expedition to Franz Josef Land in 1900 and 1902. He and Leffingwell directed an Anglo-American expedition into the Arctic in 1906-1907, spending the winter there. He organized an expedition to survey the N. E. coast of Greenland in 1910, in which he lost his ship, and returned to within reach of rescue by sledge. His writings include "Conquering the Arctic" (1909) and "Lost in the Arctic" (1913).

MIKNAS (mik'näs), or **MEQUINEZ** (mek'i-nez), a town of Morocco, the summer residence of the Sultan, and the mosque of Muley Ismail is the burial place of the royal house.

MILAN (mi-lan', or mil'an), a city of northern Italy, capital of the province of Milan, and the former capital of Lombardy. The most remarkable among its public buildings are the cathedral, an imposing Gothic structure, inferior only to that of St. Peter's at Rome, or St. Paul's of London, being 485 feet long, 252 feet broad, and height of dome 355 feet, adorned with over 4,500 statues; the church of St. Ambrose, in which the German emperors usually received the Lombard crown; the Palazzo del Corte, or royal palace, and the Teatro della Scala. In the Piazza di Castello is an arena built by Napoleon I. in 1806, on the model of the amphitheater at Rome. Principal institutions are the Brera Palace, which has a library of over 140,000 volumes, and the Ambrosian College, containing a library of over 95,000 volumes, and 15,000 MSS. Attached to the latter is also a gallery of paintings, containing works by Titian, Da Vinci, Luini, Albano, etc., and sketches by Raphael, Pietro de Cortona, and Caravaggio. Manufactures velvets, silks, ribbons, laces, carpets, glass, paper, etc. Milan is the center of the silk trade of northern Italy. Milan (ancient Mediolanum), supposed to have been founded by the Gauls, was annexed to the Roman dominions by Scipio Nascica, 191 B. C. In the 4th century, it held the rank of the 6th city of the Roman empire. Pop. about 700,000.

MILAN I., King of Serbia; born in Jassy, Moldavia, Aug. 22, 1854. He studied at Paris, at the Lycée Louis-le-Grand. The assassination of his cousin, Prince Michael, caused his recall to Serbia, where he was proclaimed prince at the age of 14. A Council of Regency administered the government till the prince came of age. In 1875 he married Natalie, Princess of Stourdza, from whom he was afterward divorced, and by whom he had a son, who became King Alexander. Owing to the troubles arising out of disagreement with the queen, he abdicated in favor of his son, March 6, 1889. He was reconciled to Queen Natalie in 1893, and in 1894, despite his pledge to the contrary, he returned to Belgrade. He died in Vienna, Feb. 11, 1901.

MILAN DECREE, a decree issued by Napoleon I. from Milan, Feb. 18, 1801, for cutting off Great Britain from all connection with the Continent.

MILAZZO (mē-lät'sō) (ancient Mylæ), a fortified seaport of Sicily, on a promontory 21 miles W. of Messina. Off Mylæ in 260 B. C. the Romans won a great sea fight over the Carthaginians; and here July 20, 1860, Garibaldi, with 2,500 men, defeated 7,000 Neapolitans, and compelled the garrison to evacuate the fortress. Pop. of commune about 17,000.

MILDEW, a morbid appearance produced on plants by the ravages of parasitical fungi or other cause, or the parasitical fungus itself which produces the morbid appearance. Such fungi are always minute, and sometimes microscopic. Some attack plants internally, and then force their way to the surface. Other mildews are produced by fungi which grow on the surface of plants, as on cabbages, roses, and hops. These fungi, growing on the surface of leaves, fruits, etc., do not establish themselves till the plant on which they grow has become unhealthy from other causes.

MILE, a measure of length or distance in use in the United States and almost all European countries. The English statute mile, in use in the United States, contains 8 furlongs, of 320 poles, or 1,760 yards or 5,280 feet; in surveying it measures 80 chains. A geographical mile is 6,075 feet (nearly), or 1.15 statute miles. A square mile is 6,400 square chains, or 640 acres. The English statute mile = 1,609.3148 French mètres. A league is 3 miles. The nautical mile is 2,028 yards, or 1,014 fathoms. The Irish mile is=2,240 yards, or 1.273 English mile. The German short mile is = 3.897 English miles. The German long mile = 5.753 English miles. See METRIC SYSTEM.

MILES CITY, county-seat of Custer co., Mont., 114 miles N. E. of Billings, Chicago, Milwaukee and St. Paul, and Northern Pacific railroads. Center of extensive cattle and farming district, and market for horses. Has manufactures of saddlery, woolen goods. Has fine buildings and park. Pop. (1915) 7,621; (1920) 7,937.

MILES, NELSON APPLETON, an American military officer; born in Westminster, Mass., Aug. 8, 1839 Entered the service as 1st lieutenant of the 22d Massachusetts Regiment in October, 1861; and distinguished himself at the battles of Fair Oaks, Charles City Cross Roads, and Malvern Hill. In September, 1862, he was commissioned colonel of the 61st New York Regiment, which he led at Fredericksburg and Chancellorsville, where he was severely wounded. He commanded the 1st Brigade, 1st Division, 2d Army Corps, in the Richmond campaign, and was promoted Brigadier-General, May 12, 1864; and brevetted Major-General for gallantry at Ream's Station in December, 1864. At the close of the war he was commissioned colonel of the 40th United States Infantry. He was promoted Brigadier-General in December, 1880; Major-General in April, 1890; and succeeded Lieut.-Gen. John M. Schofield as commander of the army in 1895. He took a prominent part in the wars with the Indians in 1874 and thereafter. On July 13, 1898, he assumed personal command of the army around Santiago, Cuba; and after the surrender of the Spanish army commanded the expedition which left Guantanamo Bay, July 21, landed at Guanica, Porto Rico, July 25, and was marching on San Juan, the capital, when the armistice stopped hostile operations. On the reorganization of the army in 1901 the grade of Lieutenant-General was revived and he was promoted to it. Retired Aug. 8, 1903. Publications "Personal Recollections" (1896); "Military Europe" (1898).

MILES O'REILLY. See HALPINE, CHARLES GRAHAM.

MILETUS (mi-lē'tus), in ancient geography, a city of Asia Minor on the confines of Caria, south of the mouth of the river Meander. Under the Ionians it became great in commerce, with 75 colonies. The Lydian Empire attempted its conquest, and it was forced to acknowledge the rule of Crœsus and pay tribute. Persian domination caused a revolt 500 B. C. The city was captured 494 B. C. and the population massacred, or transported. For a time Miletus was under the Athenians, then cast off the yoke. It withstood Alexander the Great 354 B. C., and though prospering under the Romans, never recovered from the Persian subjugation. St. Paul visited the city A. D. 56. It finally became a Turkish possession.

MILFORD, a town of New Haven co., Conn., 9 miles S. W. of New Haven, on Long Island Sound, on Wepowaug river, New York, New Haven, and Hartford railroad. Summer resort, with Taylor library, great memorial bridge, soldiers' monument. Manufactures straw hats, silverware, electrical supplies. Pop. (1910) 4,366; (1920) 10,193.

MILFORD, a town in Worcester co., Mass.; on the Charles river and on the New York, New Haven and Hartford and the Boston and Albany railroads. It has a waterworks system supplied from large wells, National and State banks, public library, Memorial building.

electric light and street railroad plants, and daily and weekly newspapers. There are manufactories of shoes, shoe thread, boot and shoe trees, straw goods, shoe cement, cement, foundry products, machinery, bone cutters, rubber goods, etc., and granite quarries. Milford was incorporated April 11, 1780; includes the village of North Milford; and is the trade center for a large farming and manufacturing section. Pop. (1910) 13,055; (1920) 13,471.

MILFORD HAVEN, FIRST MARQUESS OF, Admiral Louis Alexander Mountbatten, Personal Aid-de-Camp to the King of England. Born at Gratz, Austria, in May, 1854. Married his cousin, Princess Alice, daughter of Queen Victoria. Became naturalized British subject. Entered the navy in 1868. Rose to Commodore in 1902. Served in the Egyptian War of 1882. Director of Naval Intelligence 1902-1905. Rear-Admiral 1904. Commanded Chief Atlantic Squadron 1908-1910. Second Sea Lord 1911-1912. First Sea Lord 1912-1914. Resigned his German titles at the King's request in 1917, assuming the surname of Mountbatten and created a peer.

MILITARISM, a term principally used in reference to the policy of maintaining great standing armies. The development of militarism in Europe was the basic cause of the World War.

MILITARY ACADEMY, UNITED STATES. See UNITED STATES MILITARY ACADEMY.

MILITARY AERONAUTICS. See AERONAUTICS.

MILITARY COURTS, commonly called "courts-martial," are courts established for the maintenance of discipline and the administration of justice in the military and naval forces. In the United States such courts derive their authority from those provisions of the Constitution which, first, designate the President as "Commander-in-Chief of the Army and Navy of the United States," and, second, empower Congress to "raise and support armies," to "provide and maintain a navy" and to "make rules for the government and regulation of the land and naval forces."

Military law, by which courts-martial are governed, draws its provisions from several sources, of which the following are the most important:

1. The *statutory codes* established by legislative enactment.

The code governing the army is known as "The Articles of War." That governing the navy is entitled "An Act for the Government of the Navy." Both of these codes are based upon an English code of very early origin but with many modifications, all in the direction of reduced severity.

2. Other laws passed by Congress from time to time, dealing with new questions growing out of changed conditions.

3. The "Army Regulations" and "Navy Regulations" issued by the Secretaries of War and the Navy under the authority of the President.

4. Such "General and Special Orders" as are issued from time to time by the Secretaries of War and the Navy.

5. The "Customs of the Service" as these have been developed through a long series of years, including the code of ethics recognized as defining conduct becoming "an officer and a gentleman."

Courts-martial are of several kinds with varying degrees of jurisdiction and varying degrees of power as to the sentences which they may award.

The highest of these is the *General* Court-martial, which deals with all offenses charged against commissioned officers and with serious charges against enlisted men. For lesser offenses, enlisted men are brought before a *Summary* Court, of comparatively limited authority. For dealing with cases still less serious, the army has the *Regimental* and *Garrison* Courts, and the navy the *Deck* Court.

A general court-martial must be composed of not more than thirteen members, nor fewer than five. The senior officer is president of the court, with wide discretionary powers as to procedure, but with only one vote as to the finding and sentence. Whenever practicable all officers of the court must be senior to the officer to be tried. An officer, usually selected for his knowledge of law, is appointed as prosecutor, with the title "Judge-Advocate." The person on trial may be represented by counsel and if he fails to avail himself of this privilege, the court usually appoints some officer to act in this capacity. In cases where for any reason no counsel is available, the regulations provide that the judge-advocate shall assist the defendant (technically "the accused"), in any way possible. Even when a counsel is present, the court guards the rights of the accused as jealously as those of the government—the first aim of a court-martial being to arrive at the truth. While the rules of evidence recognized by courts-martial are practically identical with those of civil courts, the technicalities which so often clog the wheels of civil courts receive scant attention from courts-martial ex-

cept when they have a manifest bearing upon the case.

Under the law, general courts-martial are called into existence by an order from its President, the Secretary of War or Navy, or the commander-in-chief of a military or naval force. Officers of rank below a commander-in-chief may be vested also with this authority by special order of the President.

Courts-martial differ from civil courts, first, in the fact that their existence is temporary only, and, second, in that their findings and sentences have no validity until approved by the authority which convened the court. The cases sent to the court having been completed by the court and acted upon by the convening authority the same authority dissolves the court, which thus passes out of existence. Every member of the court takes an oath to try the case before him according to the laws for the government of the army (navy), the evidence which shall be adduced, and his own conscience. Voting on the finding and sentence is by secret ballot.

The convening authority having received the record of the trial, considers it carefully and approves, disapproves, or approves "in part." He may, if disapproving, return all the papers for reconsideration, giving his reasons for disapproving; upon which the court may modify its original action or adhere to it. In the end, the convening authority may disapprove this sentence of the court, or reduce it. He cannot, however, increase it.

Following the final action by the convening authority, the papers in the case go to the judge-advocate of the army or navy, who goes over the papers and comments upon the trial for the benefit of the Secretary, who, as in the case of the convening authority, may set aside the sentence, or reduce it, but cannot increase it.

A sentence of death cannot be carried into effect until approved by the President of the United States.

Military laws must not be confounded with *martial law*, which in time of great emergency is put into effect by a government over a certain clearly defined part of its own territory. Here we have the case of a government dealing, not with its own military forces, as in military law; not with the territory and the subjects of an enemy government, as in the case of a *military occupation*, but with its own territory and its own citizens. The occasion for the exercise of martial law will more frequently arise in time of war than in time of peace because of the unsettled conditions naturally existing at such times. Its most frequent employment is in territory which is in revolt against the government. There were many examples of the establishment of martial law in the Southern States during the Civil War of 1861-1865; in some cases by a *proclamation* of the President; in others by the *declaration* of a commander in the field.

While martial law gives wide powers to the military officers charged with its enforcement, and while it necessarily takes precedence of the local government normally exercising authority in the territory affected, it does not in ordinary cases set aside either the executive or the judicial authorities of the civil government or interfere with the normal life of the citizens. It is only when its decrees are resisted by the civil authorities, that entire control is taken over.

Perhaps the most interesting chapter of military and martial law is the treatise drawn up in 1863 by General Francis Lieber, of the United States Army, and issued by the Federal Government for the guidance of its armies in the field. While the principles and the rules laid down in this treatise had long been recognized in theory by the military forces of enlightened nations, they had never before been gathered into a manual for the guidance of all concerned and given the formal sanction of a great power addressing its own armed forces while in the midst of a great war in which the passions of both sides were intensely and violently aroused. So logical, temperate, and humane were these rules that they have formed the basis of treatises promulgated in the last half century by all military powers, and *observed* by all with the single exception of Germany.

MILITARY EDUCATION. The chief institution for military education in the United States is the United States Military Academy at West Point, N. Y. This school equals the best in Europe in thoroughness of preparation and in the wide range of the training given to military officers. After four years of intensive work the cadet begins his practical training when he is assigned to his regiment, but his schooling does not cease, for there are officers' schools at every military post. In addition to these there are schools for the further instruction in special branches of the service. (1) the Engineer School, Washington Barracks, D. C.; (2) the Mounted Service School, Fort Riley, Kansas; (3) the Army Medical School, Washington, D. C.; (4) the Coast Artillery School at Fort Monroe, Va. At Fort Leavenworth,

Kan., are situated the Army Staff College, the Army Signal School, the Army Field Engineer School, the Army School of the Line, the Army Field Service and Correspondence School for Medical Officers. Finally at the head of all these schools and designed to give intensive work to the higher officers of the army is the Army War College at Washington, D. C. Nearly all of these schools are open to National Guard officers, and to graduates of military schools whose course of study has been approved by the Army General Staff. Military instruction is also furnished by many State Institutions, and by private schools. In recognition of the service a private military school renders the government, the General Staff details an officer to be stationed at the institution and direct the military work.

There are two great military schools in England which are supported by the government, the Royal Military College at Sandhurst for cavalry and infantry cadets, and the Royal Military Academy at Woolwich for artillery and engineer cadets. The period of instruction in these schools is short—only two years, but on the other hand the examinations for entrance are very exacting and require considerable amount of college education to enable a student to pass. The expense to the cadet under the British system is considerable, and this with the high standard for entrance limits the cadets to one class of the population.

France has also two great schools for military education, the Ecole Spéciale Militaire for cavalry and infantry at Saint-Cyr, and the Polytechnique at Paris for officers of the artillery and engineers. This latter school trains men also in the building of roads, bridges, naval construction, and many of the other scientific branches of the government. Entrance is by competitive examination and by a law passed in 1905 all the successful candidates must serve one year in the ranks before taking up their two years' course in the schools. This is designed to democratize the Officers' Corps and prevent the formation of cliques of men such as were revealed in the Dreyfus case.

Belgium follows much the same system of military education as France, there being one school for officers of all arms of the service, the Ecole Militaire at Welles. Entrance is by competitive examinations.

MILITARY INSIGNIA, devices in the form of badges, epaulets, straps, chevrons, buttons, braid, mottoes, and the like, worn to differentiate the ranks and divisions of the military and naval forces. Insignia for these purposes are to-day in use in the forces of all nations, though differing according to the country to which the army and navy belong. In all countries the insignia are identical for officers or non-commissioned men of the same rank, though they differ according to the branch of the service.

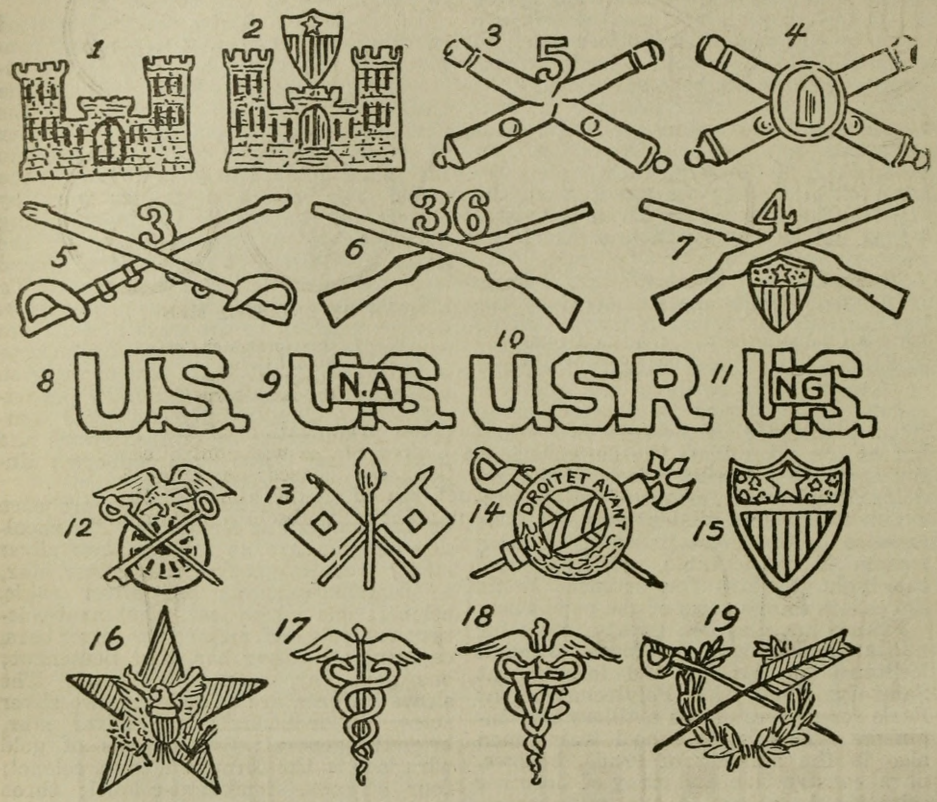
In the United States the devices used in the army and navy underwent considerable changes during the period intervening between the Revolution and the Civil War, but from the period of the Civil War the process has been rather of development than of change, and the insignia employed have been largely the same. The letters U. S. are worn by officers on the collar, volunteers being distinguished by the addition of the letter V. Officers of the National Guard wear the initial letter of their States. To indicate the various corps or departments devices relating to the work of each are employed. Thus the General Staff Corps is indicated by the U. S. coat of arms on a silver star; Adjutant-General's Department by a shield; Judge-Advocate General's Department by crossed sword and pen; Medical Corps by a caduceus; Engineers by a turreted castle.

The insignia indicating ranks are worn on the sleeves and shoulders. The shoulder insignia are as follows: two silver stars, a major-general; one silver star, a brigadier-general; one silver eagle, colonel; one silver leaf, lieutenant-coloner; one gold leaf, major; two silver bars, captain; one silver bar, first lieutenant; one gold bar, second lieutenant. The sleeve insignia are as follows: two silver stars, major-general; one silver star, brigadier-general; five strands of gold wire lace in the form of a knot, colonel; four strands, lieutenant-colonel; three strands, major; two strands, captain; one strand, first lieutenant; without gold lace, second lieutenant.

The devices employed in distinguishing ranks and divisions in the United States army are largely modeled on those which obtain in other countries. In the German army crescent-shaped epaulets are the distinguishing mark of the commissioned officer, combinations of batons and stars being used to indicate the higher ranks, while the arms of the service are indicated by the color of the tunic lace, and the state by the color of the cockade. In the British army the royal arms, arms of cities and counties, castles, antelopes, guns, bugles, crosses, and the like are used to designate the various regiments. Stripes of gold or silver braid are the main devices used to indicate rank in the French, Italian, Spanish, and Japanese

armies. In Europe generally the branches and departments of the army are distinguished more by the uniform than by distinctive badges.

MILITARY ORDER OF FOREIGN WARS, an American organization founded in New York, Dec. 27, 1894, by veterans and descendants of veterans of one or more of the four foreign wars which the United States had been engaged in, to wit: The War of the Revolution, the War with Tripoli, the War of 1812, and the Mexican War. By an amendment to the constitution all American officers who participated in the war with Spain in 1898 are rendered eligible to membership as veteran companions. Members are entitled "companions" and are either "veteran companions" or "hereditary companions." The former are commissioned officers of the army, navy, or marine corps of the United States who participated in any of the foreign wars of the United States. The latter are direct lineal descendants in the male line only of commissioned officers who served honorably in any of the said wars. The National Commandery was instituted March 11, 1896, by the officers of the New York, Pennsylvania, and Connecticut commanderies. In 1914 there were 1,500 companions, leading officers of the army and navy.

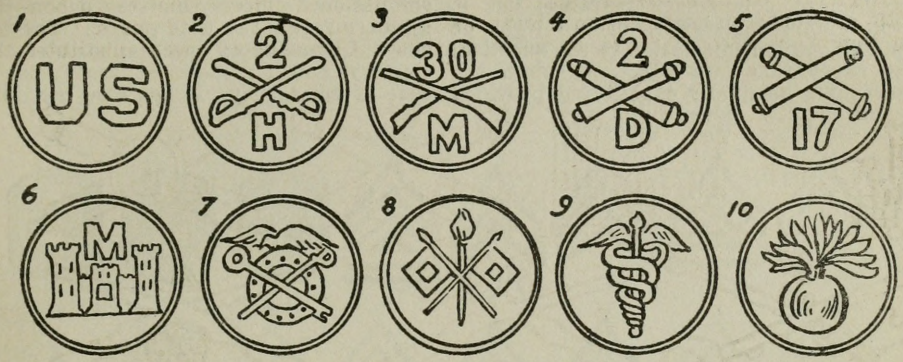


MILITARY INSIGNIA—COLLAR INSIGNIA OF UNITED STATES ARMY OFFICERS

1. Engineer Corps
2. Adjutant
3. Field Artillery
4. Coast Artillery
5. Cavalry
6. Infantry
7. Adjutant of Infantry
8. All Officers of Regular Army
9. All Officers of National Army (World War)
10. All Officers of Reserve Army
11. All Officers of National Guard
12. Quartermaster Corps
13. Signal Corps
14. Inspector-General's Department
15. Adjutant-General's Department
16. General Staff Corps
17. Medical Corps
18. Veterinary Corps
19. Judge Advocate-General's Department

MILITARY ORDERS, in Europe, religious associations whose members united in themselves the double characters of monk and knight. These orders arose about the period of the Crusades, the first to be formed being the HOSPITALLERS (*q. v.*). Their primary duties

were to tend sick pilgrims at Jerusalem and on their way to the Holy City. The order of the Templars soon followed; their purpose was to protect pilgrims and guard the Temple at Jerusalem. The orders of Alcantara, of Calatrava, and of Santiago of the Sword, in Spain, had for their immediate object the defense of their country and creed against the Moors. The Teutonic Knights had their origin in the Crusades, but afterward made the S. E. and E. shores of the Baltic the theater of their activity. These religious associations have mostly been abolished or have fallen into disuse, though some still subsist as orders of knighthood.

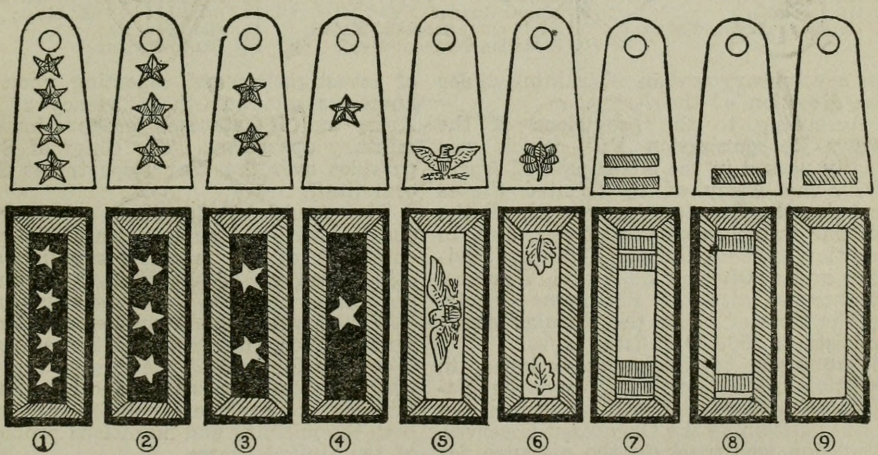


MILITARY INSIGNIA—COLLAR INSIGNIA WORN BY ENLISTED MEN

1. Right—All Enlisted Men
2. Cavalry
3. Infantry
4. Field Artillery
5. Coast Artillery
6. Engineer Corps
7. Quartermaster Corps
8. Signal Corps
9. Hospital Corps
10. Ordnance Corps

MILITARY ORGANIZATION, UNITED STATES. During the World War the organization of the Army of the United States was controlled by acts of Congress passed on June 3, 1916, which placed in the hands of the President practically absolute authority in the raising and maintaining of American forces. See UNITED STATES ARMY, SELECTIVE DRAFT LAW.

At the conclusion of peace, steps were taken to perfect a reorganization of the

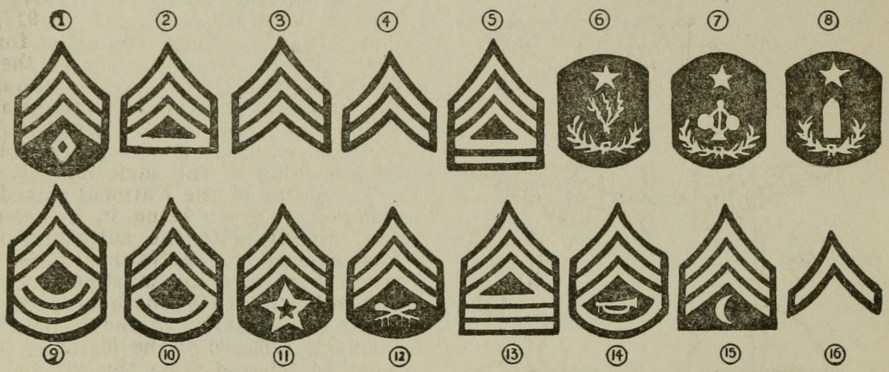


MILITARY INSIGNIA—SHOULDER STRAPS OF UNITED STATES ARMY OFFICERS

Top Row—Shoulder Straps of United States Army Officers on Olive-drab Service Coats
Bottom Row—Shoulder Straps of United States Army Officers on Dress Coats

1. General
2. Lieutenant-General
3. Major-General
4. Brigadier-General
5. Colonel
6. Lieutenant-Colonel (Silver Leaf) Major (Gold Leaf)
7. Captain
8. First Lieutenant (Silver Bar)
9. Second Lieutenant (Gold Bar)

military establishment, and measures were introduced in both Houses of Congress to bring this about. There was a strong disposition on the part of many to incorporate in the new measures a system of compulsory training, but it was found impossible, in the light of public opinion in relation to the question, to carry this into effect, although the measures as finally constituted provided for a voluntary system of training under the direction of the Army.



MILITARY INSIGNIA—CHEVRONS OF NON-COMMISSIONED OFFICERS, UNITED STATES ARMY

1. First Sergeant
2. Company Supply Sergeant
3. Sergeant
4. Corporal
5. Battalion Supply Sergeant
6. Master Electrician (Coast Artillery)
7. Engineer
8. Master Gunner
9. Regimental Sergeant-Major
10. Battalion Sergeant-Major
11. Color Sergeant
12. Drum Major
13. Regimental Supply Sergeant
14. Sergeant of Field Music
15. Mess Sergeant
16. Lance Corporal

According to the provisions of the Army Reorganization Bill, which was finally passed in the latter part of April, 1920, the Army of the United States includes the Regular Army, with all the regular branches of the service, and, in addition to these, Chemical Warfare Division and a Division of Aerial Warfare. It includes also the Philippine Scouts. In the time of peace the Regular Army consists of 280,000 enlisted men.

The peace establishment includes, in addition to the Regular Army, the National Guard of the various States and a body known as the Organized Reserves. Provision was made in the measure for the organization of these branches by a committee of the General Staff of the War Department.

The measure provides for the rates of pay for enlisted men, ranging from $74 monthly for the first grade to $30 monthly for the seventh grade.

The General Staff Corps was constituted, consisting of a Chief of Staff, the War Department General Staff, and the General Staff Troop. The War Department General Staff consists of the Chief of Staff and four assistants selected by the President from regular officers and 88 other officers not below the rank of Captain. The duties of the War Department General Staff are to prepare plans for national defense, and the use of the military forces for that purpose and for the mobilization of the manhood of the country and its material resources in case of emergency. It has also the duty of investigating and reporting upon all questions affecting the efficiency of the Army and its state of preparation for military operations. The Chief of Staff presides over the War Department General Staff.

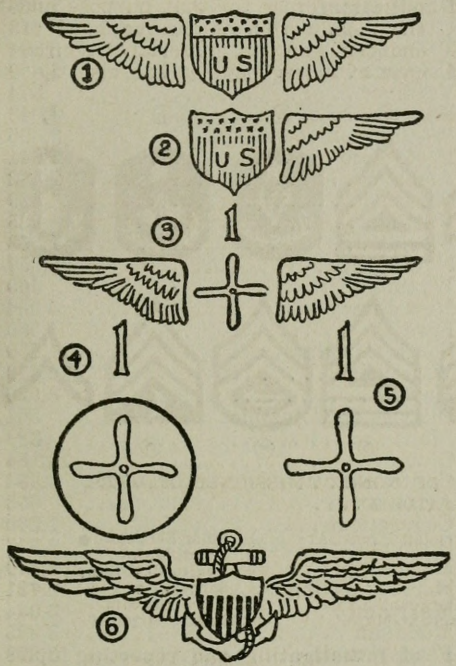
The Assistant Secretary of War is charged with the supervision of the procurement of all military supplies and other business of the War Department pertaining thereto. There is constituted a War Council which includes the Secretary of War, the Assistant Secretary of War, the General of the Army, and the Chief of Staff. It is the function of this Council to consider policies affecting both the military and munitions problems of the United States.

There was created a Finance Department, to consist of a Chief of Finance with the rank of Brigadier-General, and 141 officers ranking in grade from Colonel to Second Lieutenant and 900 enlisted men. The Chief of Finance has the duty of disbursing all funds of the War Department.

Certain changes were made in the matter of relative rank, affecting chiefly the Medical and Dental Corps and the Army Nurse Corps. The purpose of this

is to make the rank of these officers correspond to that of officers in other branches of the service.

The Air Service consists of one Chief of Air Service with the rank of Major-General, one Assistant with the rank of



MILITARY INSIGNIA OF UNITED STATES AIR SERVICE

1. Aviator-Pilot
2. Observer
3. Enlisted Aviator
4. Aviation Mechanic
5. Other Enlisted Men
6. Navy Aviator

Brigadier-General, 1,514 officers, and 16,000 enlisted men.

The infantry consists of 110,000 enlisted men and 4,200 officers; the cavalry of 20,000 enlisted men and 950 officers; and the field artillery of 37,000 enlisted men and 1,900 officers. The coast artillery consists of 30,000 enlisted men and 1,200 officers.

There is an Officers' Reserve Corps for the purpose of providing a reserve of officers available for military service when needed. Any person who has been an officer of the Army between April 6, 1917, and June 30, 1918, or an officer of the Regular Army at any time, may be appointed as Reserve Officer.

There are Reserve Officers' Training Corps, to be established in such civilian universities and colleges as are required to provide instruction in military tactics. Camps are maintained for the further practical instruction of the members of the Reserve Officers Training Corps for a period not exceeding six weeks in any one year. The President has power to appoint as Reserve Officers graduates of the Reserve Officers' Training Corps.

There is an Enlisted Reserve Corps, which consists of persons voluntarily enlisted therein for a period of three years, except in cases of persons who served in the Army and Navy and Marine Corps between April 6, 1917, and Nov. 11, 1918. These may enlist for one year periods. Organizations of the Enlisted Reserve Corps may be formed by the President into tactical organizations similar to those of the Regular Army and composed, as far as practicable, of men residing in the same locality.

The status of the National Guard was changed so as to bring it, in emergencies, directly into the national service. Men enlisted in the National Guard are required to sign an enlistment contract and subscribe to an oath of enlistment under the authority of the Federal Government. Officers of the National Guard must be selected from the enlisted men of the National Guard; from among the officers active or retired, reserve officers, and former officers of the Army and Navy or Marine Corps; and from enlisted men and former enlisted men of the Army, Navy, or Marine Corps who have been honorably discharged. They may also be selected from graduates of the United States Military and Naval Academies and from graduates of universities, colleges, and of officers' training camps where they received instructions and supervision under an officer of the Regular Army.

Affairs affecting the National Guard are under the supervision of the Military Bureau of the War Department, the Chief of which is appointed by the President. He holds office for four years and has the rank and pay and allowance of an officer of the Regular Army.

The measure revised the provisions in regard to the conduct of court-martials and outlines the jurisdiction and procedure under which they will be held.

MILITARY POLICE, men who maintain civil order in the army.

MILITARY SERVICE INSTITUTION OF THE UNITED STATES is controlled by officers of the United States Army in association with the National Guard and others, and was founded for the discussion of military views and for professional improvement which should benefit United States military interests. In 1877 Generals Fry, Stanley, and Rodenbough sent out a call to army of-

ficers to meet and consider the formation of such an institution. Forty officers responded and organized, electing General Hancock President and designating headquarters at Governor's Island. Every year the Publication Committee awards prizes of gold and silver medals, and money for essays on military subjects. In association with New York Public Library the Institute's collection of 10,000 books and pamphlets have been placed in the "Military Section" of the Public Library on Fifth Avenue for circulation among the members and for reference by the general public. There is also a valuable collection of military relics and trophies.

MILITARY TERRITORIES OF FRENCH SUDAN, constituting the eastern part of the French Sudan, divided into three territories. Included are the colonies of Upper Senegal, Niger, and the Military Territory of the Niger.

MILITARY TRAINING CAMPS. See article UNITED STATES, section *United States in the World War.*

MILITIA, NAVAL, a body organized in a number of the United States, under authority of an Act of Congress, and forming a part of the State militia. The duty of the naval militia in time of war is to man the coast and harbor defense vessels, thus leaving free the regular force to carry on offensive operations at sea. In 1910 this militia was organized in 20 States and in the District of Columbia.

In February, 1914, an Act to Provide for the Efficiency of the Naval Militia was passed, and the Division of Naval Militia Affairs took over the Office of Naval Militia on April 14 of that year. A National Naval Militia Board of Officers of the Atlantic, Pacific, and Great Lakes Divisions convenes at Washington when necessary. The first annual inspection took place in the spring of 1914, when the board examined officers and enlisted men. By Act passed in August, 1916, creating National Naval Volunteers, members of Naval Militia organizations were authorized to volunteer for any emergency, for any duty, without the usual restrictions imposed on Naval Militia as such. It followed that when the United States entered the World War practically all of the Naval Militia volunteered for any naval service.

MILITIA, STATE. The following table shows the authorized strength of the regularly organized militia, or National Guard, in the several States and Territories, 1920:

ENLISTED STRENGTH AUTHORIZED FOR FISCAL YEAR 1920

Maine	1,563
Oklahoma	3,813
Minnesota	5,196
Oregon	2,152
Rhode Island	1,086
Utah	713
Tennessee	2,294
Colorado	2,069
Vermont	874
Kansas	4,043
Washington	2,695
Porto Rico	1,641
Alabama	2,432
Missouri	4,429
Virginia	2,365
Florida	1,563
New York	20,857
Wyoming	560
New Jersey	4,084
Iowa	4,580
South Carolina	1,859
Wisconsin	10,419
Hawaii	3,020
District of Columbia	801
Idaho	389
Ohio	13,184
California	3,584
Arizona	658
Connecticut	1,360
Georgia	2,877
Mississippi	1,879
North Carolina	2,721
Maryland	3,044
Michigan	3,326
Pennsylvania	13,273
Texas	15,896
Other States	31,621
Total	178,920

The actual strength was about 50,000. See MILITARY ORGANIZATION, UNITED STATES.

MILK, the fluid secreted by all female mammals for the nourishment of their young. As an alimentary substance, it may be regarded as a perfect food. It consists essentially of a solution of sugar, albuminous and saline matter, and holds in suspension a certain proportion of fat in the form of very minute globules. Mare's milk contains a larger proportion of sugar, while that of the ewe is very much richer in albuminous and fatty constituents, the milk of the cow having its composition more evenly adjusted. Milk spontaneously ferments, the sugar being converted into lactic acid, alcohol, and carbonic acid gas. When an artificial ferment has been used, a larger proportion of alcohol is generated, and the milk is converted into a product to which the name of koumiss has been given. The

chief adulterant added to milk is water; but sugar, carbonate of soda, salt, salicylic acid, and borax are also occasionally used. Condensed milk consists of cow's or goat's milk which has been evaporated by the aid of steam pipes or a vacuum pan.

In human physiology, milk is the secretion of the mammary glands, whose activity begins at delivery, and continues for a period of nine months as a rule, but, if encouraged, may persist for a longer time. The fluid secreted contains all that is requisite for the nourishment and development of the child. The first milk secreted is colostrum; it acts as a natural purgative to the child.

Municipal and State governments in the U. S. A. for many years have worked for a supply of pure, cheap milk. After the World War the authorities of New York State and City were especially active in regulating the milk industry, and keeping down the price.

MILK FEVER, a fever which sometimes arises in females when first milk is secreted after child-birth.

MILK SNAKE, a harmless snake of a grayish ash color, with three rows of dark spots along the back and sides. It is found in the Northern and Middle United States.

MILKY WAY. See GALAXY.

MILL, a money of account in the United States, being the thousandth part of a dollar, or tenth part of a cent. The mill, however, is not coined.

MILL, a machine for grinding grain, fruit, or other substances, and reducing them to a fine powder. Also a lapidary's grinding wheel, known as roughing mill, cloth mill, etc. Also a machine, or complication of engines or machinery, for working up raw material. In die-sinking, the hardened steel roller having the design in cameo, and used for impressing in intaglio a plate, as in the bank-note system of engraving; or a copper cylinder, as in the process of engraving cylinders for calico printing.

MILL, JAMES, an English political economist; born in Forfarshire, Scotland, April 6, 1773. In 1818 he published his admirable "History of British India." He also produced several valuable works on legislation and morals, viz., his "Elements of Political Economy"; an "Analysis of the Human Mind"; and "Prison and Prison Discipline"; "Colonies"; "Laws of Nations"; and "Education." He held the office of chief examiner of accounts to the East India Company. He died in Kensington, June 23, 1836.

MILL, JOHN STUART, an English philosopher; son of James Mill; born in London, England, May 20, 1806. He was trained under the immediate influence of his father. At the age of 14 he entered on a course of political economy, and thereafter this strenuous education of the boy ceased—so far, at least, as the strict surveillance of his father was concerned. In his 21st year he edited Bentham's work "On Evidence." In 1843 appeared the first of his two chief works, "A System of Logic," the second being "Principles of Political Economy" (1848). To these he afterward added his work "On Liberty" (1859); "Thoughts on Parliamentary Reform" (1861); "Utilitarianism" (1862); the "Examination of Sir William Hamilton's Philosophy," and a "Study of Auguste Comte and Positivism" (1865). In this last year he was returned to Parliament as member for Westminster. His Autobiography was published in 1873, and the three essays, "Nature," "The Utility of Religion," and "Theism," in 1874. Mill's works on logic and political economy are standard textbooks. In the former he placed the system of inductive logic on a firm basis. He died in Avignon, France, May 8, 1873.

MILLAIS, SIR JOHN EVERETT (mil-lā'), an English painter; born in Southampton, England, June 8, 1829. He gained his first medal for drawing when nine years old; became a student at the Royal Academy; exhibited his first picture "Pizarro seizing the Inca of Peru" (1846); and received the gold medal for a historical painting, "The Tribe of Benjamin seizing the Daughters of Shiloh" (1848). In his earlier days he was a leader of the pre-Raphaelite School, but on attaining maturity in art he abandoned the peculiarities for which that school is noted. As the result of this new departure Millais painted such pictures as "Ferdinand Lured by Ariel," "Mariana in the Moated Grange," "The Huguenot Lovers," "The Black Brunswicker," and "Ophelia," while its influence was also apparent in his landscapes of "Chill October," "The Fringe of the Moor," etc. He was chosen president of the Royal Academy in 1896. He died in London, Aug. 13, 1896.

MILLENNIUM, in Scripture, a period of 1,000 years, during which Satan shall be confined to the bottomless pit.

During the first three centuries, when Christians were at intervals in danger of martydom, and many actually suffered death, the millennium loomed largely before their minds; the second advent of Christ, interpreted literally, was considered to be pre-millennial, and the mil-

lennium to be a literal reign of Him and the martyrs. Two opinions are now held: one, that the advent of Christ will be premillennial, and that a literal reign of martyrs and saints shall take place with Him on earth; the other is, that the millennium will be brought on by the blessing of the Holy Spirit on the means employed for the conversion of the world, and that during the continuance of the promised years Jesus shall reign in the hearts of nearly all mankind, and shall not return visibly till He comes as Judge.

MILLEPEDE (mil'le-pēd), a popular name for the members of one of the orders of Myriapods, of which *Julus* is a good type.

MILLEPORA (-lep'-), in zoölogy, the typical genus of a calcareous *Milleporidæ*. It consists of a calcareous skeleton with a foliaceous or laminar expansion, studded with minute apertures of two sizes. The colony consists of two kinds of zoöds, the one with four to six knobbed tentacles inhabiting the larger, and the second with five to 25 tentacles the smaller ones.

MILLER, CINCINNATUS HEINE, better known as Joaquin Miller, an American poet; born in Wabash district, Ind., Nov. 10, 1841. His "Collected Poems" appeared in 1882. After that he published "Songs of Mexican Seas"; and "Songs of the Sunlands." He wrote in prose "The Baroness of New York" (1877); "'49, or The Gold Seekers of the Sierras" (1884); "Life of Christ," in verse; "Chants for the Boer" (1900); etc. His novel "The Danites" was successfully staged. Died 1913.

MILLER, HENRY, actor and theatrical manager; born London, England, in 1860, came to United States in 1871. First appeared at Toronto in "Amy Robsart," joined Modjeska's company in 1878, and with Adelaide Neilson two seasons. Next played in Charles Frohman's company as leading man, and appeared as star in original production of "Heartsease," 1896. He created the leading rôle in "The Only Way" and opened the Princess Theater with "The Great Divide" in 1906. He appeared in "The Rainbow" and in "Daddy Long-Legs" (1915), acting as his own manager.

MILLER, WARNER, an American legislator; born in Oswego co., N. Y., Aug. 12, 1838. When the Civil War broke out he enlisted in the 5th New York Cavalry, and was afterward promoted to 1st lieutenant. Member of New York Assembly in 1874-1875; and of Congress 1878-1880. On the resignation of Thomas C. Platt, in 1881, he was elected to fill that unexpired term in the United States Senate; in 1888 was the Republican nominee for governor of New York, but was defeated. Died in 1918.

MILLER, WILLIAM, an American religious leader; born in Pittsfield, Mass., Feb. 15, 1782. In 1815 he took up his residence at Low Hampton, N. Y. He became deeply interested in the prophecies of the Bible and in 1831 predicted the second coming of Christ and fixed the year 1843 as the time at which the world would be destroyed. The believers in the peculiar doctrines of this sect are now called Millerites or Second Adventists. Miller died in Low Hampton, N. Y., Dec. 29, 1849. See ADVENTISTS.

MILLERAND, ALEXANDRE, a French statesman; born in Paris 1859. Studied law and as a Socialist was elected to the Municipal Council in 1884. As a Radical-Socialist joined Chamber of Deputies, 1885. Proprietor of "La Voix," and later editor "Petit République," 1881-1896. 1889-1899, Minister of Commerce. Helped to pass laws favoring the working class, including a 10-hour day for women and children and one day's rest each week. Endeavored to pass a law enforcing arbitration in labor disputes. Expelled from Socialist Party for accepting office in a non-socialist government. In 1909 Minister of Commerce, Posts, and Telegraphs; Public Works, 1909-1910. War Minister, 1912, when he gained distinction for his work of re-organizing the army. War Minister in the coalition cabinet of Viviani, 1914-1915. Commissioned to re-organize Alsace-Lorraine after the World War. Prime Minister in 1920. He was elected President of France in the latter part of 1920, after President Deschanel had resigned on Sept. 16, 1920, on account of illness.

MILLET, the common name for a great number of cereal plants, the grains of which are used as food, and for making a kind of beer, in various countries.

MILLET, FRANCIS DAVIS, an American artist and author; born in Mattapoisett, Mass., Nov. 3, 1846; was graduated at Harvard College in 1869. His art work was largely in connection with expositions. He was very successful as correspondent of the London "Daily News" in the Turco-Russian War; was special correspondent of the London "Times" and "Harper's Weekly" at Manila (1898); and a frequent contributor to periodicals. He published in book form "A Capillary Crime, and Other Stories"; and "The Danube from the Black Forest to the Black Sea." Died 1912 in the "Titanic" disaster.

MILLET (mi-lā'), **JEAN FRANÇOIS**, a French painter; born in Gruchy, near Cherbourg, France, Oct. 4, 1814. He worked with his peasant father in the fields; studied drawing at the academy of Cherbourg; from thence passed with an allowance from this town to the atelier of Delaroche in Paris, and exhibited at the Salon in 1840. In 1849 he left Paris and settled among the peasants of Barbizon, on the edge of Fontainebleau Forest, and devoted himself to transferring their simple everyday life to his canvases, which he did with great truth of sentiment and subdued poetic charm. Of his paintings may be mentioned "The Sheep-Shearers," "The Gleaners," "The Sower," "The Shepherdess with her Flock," and "The Angelus." The last was sold by auction in Paris, in 1889, for about $115,000. He died in Barbizon, France, Jan. 20, 1875. Among his paintings in the United States are "The Sower" (Vanderbilt Coll.), "Harvesters" and "Homestead at Gréville" (Boston Art Museum), "Potato Diggers" and "Breaking Flax" (Walters Coll.), "Man with the Hoe" (San Francisco Museum).

MILLIARD, the French collective name for a thousand millions.

MILLIGRAM, the thousandth part of a gramme; 0.154 English grains.

MILLILITER (mil'li-lē-tur), a French measure of capacity, containing the thousandth part of a liter, equal .06103 of a cubic inch.

MILLIMETER, a French lineal measure equal to the thousandth part of a meter, or .03937 of an English inch.

MILLING. See FLOUR MILL.

MILLS, ALBERT LEOPOLD, an American military officer; born in New York City, May 7, 1854; was graduated at the United States Military Academy in 1879 and commissioned 2d Lieutenant of the 1st United States Cavalry; promoted 1st Lieutenant in 1889; served at the United States Infantry and Cavalry School, Fort Leavenworth, Kan., in 1894-1898; appointed Captain of Volunteers May 12, 1898, and served in the war with Spain, being conspicuous for bravery at Las Guasimas and Santiago. He received the brevets of major and lieutenant-colonel for gallantry, Congress Medal of Honor 1898. Command Dept. of Visayas (1907-1908), of Luzon and the Dept. of the Gulf (1908-1910). He died in September, 1916.

MILLS, ROGER QUARLES, an American politician; born in Todd co., Ky., March 30, 1832. In 1849 he removed to Texas and was a member of Congress from that State in 1873-1892. He served in the Confederate army during the Civil War. While chairman of the Ways and Means Committee (1887-1889) he introduced the Mills Tariff Bill. He represented Texas in the United States Senate from 1892 to 1899. Died 1911.

MILLS COLLEGE, an educational non-sectarian institution for women in Seminary Park, Cal.; founded in 1871; reported at the close of 1919: Professors and instructors, 53; students, 312; volumes in the library, 6,000; number of graduates, 535; president, A. H. Reinhardt.

MILLSAPS COLLEGE, an educational institution in Jackson, Miss.; founded in 1892 under the auspices of the Methodist Episcopal Church; reported at the close of 1919: Professors and instructors, 15; students, 320; president, A. F. Watkins, D. D.

MILLVALE, a borough of Pennsylvania, in Allegheny co. It is on the Allegheny river, and on the Pennsylvania and the Baltimore and Ohio railroads. It has important industrial interests, including the manufacture of iron, saws, stones, and lumber. Pop. (1910) 7,861; (1920) 8,031.

MILLVILLE, a city in Cumberland co., N. J.; on the Maurice river, and on the Pennsylvania railroad; 40 miles S. E. of Philadelphia. It has a high school, public library, electric railroad to Bridgeton, waterworks, electric lights, a National bank, and daily and weekly newspapers; extensive manufactories of glass bottles, other glassware; cotton goods, water pipes, iron castings, etc. Pop. (1910) 12,451; (1920) 14,691.

MILMAN, HENRY HART, an English historian; born in London, England, Feb. 10, 1791. He was Professor of Poetry at Oxford, 1821-1831; Bampton lecturer 1827; canon of Westminster 1835; dean of St. Paul's 1849. His "History of the Jews" (1830) excited intense antagonism. He wrote "History of Christianity under the Empire" (1840), and published in 1855 his most important work, "The History of Latin Christianity down to the Death of Pope Nicholas V." In verse he produced "Samor" (1818), an epic; "Fall of Jerusalem" (1820); etc. The drama "Fazio" (1815) was performed in 1818 by Charles Kemble, and by Madame Ristori in 1856. He died near Ascot, Sept. 24, 1868.

MILNER, ALFRED, 1st Viscount, an English colonial governor, born at

Bonn, Germany, March 23, 1854. Educated at Tübingen, King's College, London, and Balliol, Oxford. Studied law. Became a journalist 1882-1885. Secretary to C. J. (afterward Lord) Goschen, Chancellor of the Exchequer 1887-1889. Under Secretary of Finance, Egypt, 1889-1892., Chairman Board of Internal Revenue 1892-1897, High Commissioner for South Africa 1897, and Governor of Good Hope. Created Viscount 1902. Governor Transvaal and Orange River Colonies 1901. Resigned offices and returned to England in 1905. Lord Milner was severely criticized in Liberal party circles as sharing the responsibility for the South African War with Cecil Rhodes and Joseph Chamberlain. The House of Commons indirectly expressed disapproval of some of his acts in the Transvaal. The House of Lords placed on record its appreciation of his services in the colonies and an address praising his work and signed by 370,000 names was presented in August, 1906. Secretary of State for War 1918-1919.

MILNES, RICHARD MONCKTON. See HOUGHTON, LORD.

MILO. See MELOS.

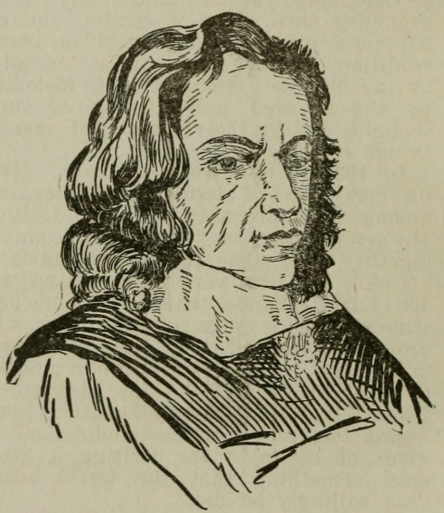
MILOUNA PASS, a high point in the Olympian Mountains in Thessaly, not far from Tyrnavos. It was the scene of a Greek defeat in the Greco-Turkish War of 1897.

MILTIADES (-tī'a-dēz), an Athenian general, hero of Marathon. He was the youngest son of Cimon, and succeeded his brother Stesagoras about 515 B. C., as tyrant of the Chersonese. He took part in the invasion of Scythia by Darius, held his government of the Chersonese at least 22 years, and retired to Athens in 493. He distinguished himself by a great victory over the Persians at Marathon. Having persuaded the Athenians to give him the command of a fleet, he used it for private ends in an attack on Paros. The attack failed, Miltiades was severely wounded, and on his return to Athens was prosecuted and imprisoned. His death took place in prison about 489 B. C.

MILTON, a borough in Northumberland co., Pa., on the West Branch of the Susquehanna river, and on the Philadelphia and Reading, and Pennsylvania railroads; 15 miles W. N. W. of Danville. There are several churches, National bank, and weekly newspapers. It has rolling mills, car shops, knitting factory, saw and planing mills, and manufactories of nails, tools, and machinery. Pop. (1910) 7,460; (1920) 8,638.

MILTON, town of Norfolk co., Mass., 7 miles S. of Boston, on the Neponset river, New York, New Haven and Hartford railroad. Contains homes of many Boston business people. Has academy and meteorological observatory. Large stone quarries in the vicinity. Town meeting form of government. Pop. (1910) 7,924; (1920) 9,382.

MILTON, JOHN, an English poet, born on Dec. 9, 1608, in London. His father, a distinguished musician, made a comfortable living from his profession of scrivener, and was wise enough to recognize the genius of his son and to give him a most careful education. Milton was sent to St. Paul's School in 1620, where he became acquainted



JOHN MILTON

with the work of Chaucer, Spenser, and other English poets as well as with the great names of classical antiquity. Both school and home life, therefore, stimulated his instinct for poetry, music, and philosophy, all master passions of his life. In 1625 he entered Christ's College, Cambridge, securing the degree of B. A. in 1629 and of M. A. in 1632. He planned at first to go into the Church, but during the period of five years of quiet study at Horton, his father's rural place, he determined instead to devote himself to literature and learning. In this period he covered the whole field of classical literature, Italian literature, philosophy, and English writers. Meantime he was producing a small but exquisite body of original verse. He had already, as a university student, written a hymn, "On the Morning of Christ's Nativity" (1629), which blended pagan and Christian ele-

ments in its perception of the beauty of the old religious faiths put to flight by the coming of Christ and anticipated the theme of "Paradise Lost." During the Horton period he wrote "L'Allegro" and "Il Penseroso" (1634), studies in contrasted moods, representing what were to him the two sides of a well-proportioned life. Less elaborate than Spenser's first work, the "Shepheards Calender," these two poems were not less definitely the prologue to a new poetic achievement. This impression was deepened by other Horton work, notably "Comus" (1634), a pastoral masque showing indebtedness to Spenser and subtly promising an end of the court party under the rising tide of Puritanism; and "Lycidas" (1637), ostensibly a pastoral dirge in memory of a Cambridge acquaintance, but really prophecy once more of coming change. All these poems are learned in poetic tradition, but the learning is concealed by the infinite variety of their melodies, by the assured individuality of their thought, and by their promise of greater things to come.

In 1638 Milton went to Italy. Here he met men of letters and learning, among them probably the aged Galileo. He wrote little—a few Italian sonnets, together with some further examples of his skill in Latin verse (he had written six Latin elegies while a Cambridge student). This series of Latin poems he brought to an end, soon after his return to England, in a pastoral dirge in memory of his friend Diodati ("Epitaphium Damonis), a marvelously beautiful poem significant also for the indications it gives of his plan for writing a great epic, something that the world would "not willingly let die."

The Italian journey was cut short by the increasing tension in English affairs. He afterward remarked, "I thought it base to be travelling for amusement abroad, while my fellow citizens were fighting for liberty at home." The remark is deeply signficant of his character, which was marked by intense patriotism and an equally intense love of liberty. In the twenty years next following he wrote no poetry except a few sonnets. His time was divided between his duties as Latin Secretary under Cromwell, which involved not only carrying on the government correspondence with European powers but also the various defenses of the Commonwealth; and a series of prose works in which he set forth his political and ethical philosophy. Of the first of these occupations there is no space here to treat. His more significant prose work was ushered in by "Of Reformation in England" (1641), a treatise on government of the Church, and was followed by "Reason of Church Government" (1642), which has additional value because of autobiographical passages. His first marriage, in 1643, was unhappy. This partly, though not wholly, accounts for the treatise on Divorce (1643). He was interested in humanist conceptions of education, and his tractate "Of Education" (1644) is an eloquent and inspiring treatment of the subject. In the same year appeared his finest prose work, "Areopagitica," a plea for freedom of thought marked by eloquence, high philosophical purpose, and the passion for liberty that is a keynote of his life. In this work he bore witness to the influence of Spenser upon him, and Spenser's adaptation of Plato and Aristotle, here summarized by Milton, supplied much of the philosophy that is blended with Christian dogma in "Paradise Lost." In 1645 he published the first collected edition of his poems. Literary and philosophical interests of this kind, however, were carried on with difficulty in the face of the increasing demands of the Puritan party on his time. In 1645 he became Latin Secretary and in the next few years published eleven pamphlets, mainly controversial, and sacrificed his sight to the Puritan cause. The sincerity of his devotion is marked not only by the continuance of this work when it became certain that blindness would result, but also by his publication in 1660, when the cause was lost, of his tract on "A Ready and Easy Way to Establish a Free Commonwealth," a book that brought him into peril of his life.

The youthful purpose to write a great epic poem he had never abandoned. The prevailing view of most of Milton's biographers that the long period from his return from Italy to the beginning of active work on "Paradise Lost" were wasted and that he gave his best years to work that a less gifted man might have done is in error. "Paradise Lost" would not be the poem that he made it had it not been for his experience with men and affairs, his saturation with an enormous body of thought, and the constant planning and ripening of mind that prepared him to write. A part of the poem was probably written during the Protectorate; with the Restoration he carried forward the great project to such purpose that it was complete by 1663, though not published until 1667. Before the publication he had already begun work on "Paradise Regained," which was published in 1671, when "Samson Agonistes," his last important work, also appeared. The three great poetical works

are closely linked. "Paradise Lost," like Dante's great poem, sums up an epoch. The sacred dramas of the Middle Ages had dealt with the scheme of salvation, the rebellion of Lucifer, the temptation and fall of man, the coming of the Christ who was to make atonement. In the 16th and 17th centuries every country in Europe produced dramas and epics upon the theme. To this theme Milton added a profound philosophy, the fruit of many years of study. He cast his poem on Vergilian lines. He used in it, besides the conventional elements of the story, his knowledge of the classical literature and philosophy; it was colored by his experience with life, his idea of the relation between liberty and discipline, and his interest, characteristic of the time, in the relation of man to nature. His purpose, "to justify the ways of God to Man," is thus seen to be not merely theological; it includes the whole mystery of man's relation to God, to his fellows, and to external nature. The twelve books of which it is composed may thus be studied as the high water mark of Renaissance epic, as a summary of thought and philosophy for centuries, and as the revelation of one of the most powerful personalities the world has produced. The blank verse in which it is written, different from Shakespeare's, but not less flexible, the sublimity of the imagination of an action carried on throughout a universe, the characterization of titanic personages, the descriptions, the similes, the lists of charmed names, the loftiness of the style—all combine to place the poem securely in the small list of the world's immortals, with Homer and Vergil and Dante, and in the very highest rank of poetry in the English tongue.

"Of "Paradise Regained" and "Samson Agonistes" it must suffice to say that though in widely different ways they illustrate the same transcendent power. The first, an epic in four books, completes the theme of "Paradise Lost" by showing how the "Greater Man" is to bring salvation. The second, a tragedy cast in Greek mold, treats the Biblical story in the massive style of Sophocles. After these supreme expressions of his genius Milton did little more. A few revisions, leading to new editions of his minor poems, and a few more prose pieces, notably a "History of Britain," complete the story. He died Nov. 8, 1674, and was buried in St. Giles' Church, Cripplegate.

MILTON COLLEGE, a coeducational institution in Milton, Wis.; founded in 1867 under the auspices of the Seventh Day Adventists; reported at the close of 1919: Professors and instructors, 118; students, 178; volumes in the library, 7,895; productive funds, $83,244; grounds and buildings valued at $31,000; income, $10,473; number of graduates, 280; president, Rev. W. C. Daland, A. M., D. D.

MILWAUKEE, a city, port of entry, county-seat of Milwaukee co., Wis., and the largest city in population and importance in the State; on the W. side of Lake Michigan, at the mouth of the Milwaukee river; 85 miles N. by W. of Chicago and 83 miles E. of Madison; area, 22 square miles; pop. (1910) 373,857; (1920) 457,147. It has a beautiful harbor with many extensive piers used by steamboat lines; and has regular communication by water and rail with all the chief cities on the Great Lakes.

Topography.—The Milwaukee river extends through the principal part of the city, and with the Menomonee and Kinnickinnic rivers, with which it connects, divides it into three sections, known respectively as the East, West, and South sides. All of these rivers are navigable for the largest lake vessels. On the W. side of the Milwaukee river the surface has an elevation of 125 feet, and between the lake and the river, 80 feet. There are wide and beautiful streets, which, with the exception of those in the business quarter, are usually well shaded. The principal streets include East Water street, West Water street, Third street, Wisconsin street, and Grand avenue.

Municipal Improvements.—The waterworks receive their supply from the lake. The consumption averages 54,000,000 gallons per day. There are about 500 miles of streets, of which 421 are paved. There is an excellent sewerage system.

Notable Buildings.—The chief public buildings are the County Court House, a building of brown sandstone; the Mitchell, Northwestern Life Insurance, Wells, and Germania Sentinel buildings; the City Hall; the Northwestern Soldiers' National Home; the Federal building, containing the Postoffice and Custom House; the Public Library and Museum Building; the Layton Art Gallery. Besides these, there are many hospitals and similar institutions and many charitable and benevolent asylums. The city is also the seat of a Protestant Episcopal bishop and of a Roman Catholic archbishop. The most notable church edifices include St. Paul's Episcopal, St. James Episcopal, the Roman Catholic Cathedral of St. John, the Church of Gesu, St. Josephat's Catholic and the Trinity Lutheran Churches.

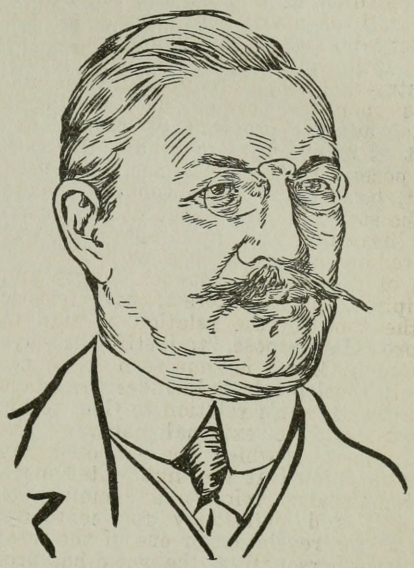
Manufactures.—Milwaukee is an important manufacturing center. Iron and steel products are its most important industry. There are over 100 establishments manufacturing iron, steel and heavy machinery. The value of the product is over $160,000,000 annually. Its flour mills are very large, often having a daily output of 10,000 barrels, and its grain elevators have a capacity of 9,735,000 bushels. Pork-packing is here carried on extensively. The other industries include manufactories of leather, machinery, iron and steel goods, tobacco, clothing, stoves, and tinware, brick, furnaces, cars, steel and malleable iron. There are over 3,600 large factories, and the total value of the manufactured products in 1918 was $741,188,557.

Education.—The city has 9 high schools, and many other school buildings used for grammar, primary, and kindergarten schools. In 1919 the enrollment was 53,441. The expenditures for education were $2,325,480. The institutions of higher education include a State Normal School, the Milwaukee College for Women, the Marquette (R. C.), the Catholic Seminary of St. Francis de Sales, the Convent de Notre Dame, and Concordia College (Luth.).

Finances.—The assessed valuations in 1919 were: Real estate, $419,074,285; personal property, $102,164,840; tax rate, $20.74 per $1,000; net debt, $14,730,750.

History.—Milwaukee was founded in 1835, and chartered as a city in 1846. The first white settler on the site of the city was Juneau, a French fur trader, who came here in 1817, when the place was a Pottawattamie village. The growth of the city has been very rapid. The Germans who make up one-half of the population have everywhere left their influence upon the social life of the inhabitants.

MILYUKOFF, PAUL NIKOLAIEVITCH, Russian historian and publicist, born near Petrograd, in 1859. Graduating from Moscow University, he taught for some years, then became involved in a revolutionary movement, which compelled him to flee abroad. After a brief period as professor of Slavic history in the University of Sofia, Bulgaria, he came to America and was for three years a member of the faculty of Chicago University. In 1905 he returned to Russia, where he became engaged in politics and assumed the leadership of the Constitutional Democratic party, more popularly known as "the Cadets." He was also prominent as a journalist and founded the newspaper "Retch." After the revolution of March, 1917, when he was a member of the Duma, he became Minister of Foreign Affairs in the Cabinet of the Provisional Government. Incurring the displeasure of the radical elements, because of his advocacy of Russian ex-



PAUL NIKOLAIEVITCH MILYUKOFF

pansion in the direction of Constantinople, he was forced to resign. After the second revolution, which placed the Bolsheviki in power, he became a refugee abroad, and was later one of the body of Russians who urged the Allied countries to adopt an anti-Bolshevik policy.

MIME, a kind of farce or dramatic representation among the Greeks and Romans, in which incidents of real life were represented in a ludicrous or farcical fashion.

MIMEOGRAPH (mim'ē-ō-), an instrument by which copies of any document may be transcribed and multiplied, through the use of a stencil made of thin paper prepared with paraffine or similar substance, which is put upon an ordinary typewriting machine, and receives the impression of the letters in the ordinary way.

MIMOSA, the typical genus of the sub-order *Mimoseæ* and the tribe Eumimoseæ. As constituted by Linnæus, it included the *Acacia* and nearly all the other genera of the modern sub-order *Mimosæ.* About 200 are known, the majority from America, the rest from India and Africa. They are prickly herbs or shrubs, sometimes climbing; the leaves are bipinnate, and in some species

sensitive. *M. pudica* and *M. sensitiva* are the sensitive plants. The former is naturalized over India; the leaves are prescribed in piles and fistula. The bruised leaves of *M. rubicaulis* are applied to burns. Its root is charred for gunpowder charcoal. The legumes of *M. saponaria*, or *Acacia concinna*, are saponaceous and are an article of commerce in India.

MINA, an ancient denomination of money among the Greeks, and was worth about $16.

MINARET, a slender lofty turret rising by different stages or stories, surrounded by one or more projecting balconies, commonly attached to mosques in Mohammedan countries, used by the priests to summon the people to prayers.

MINAS, capital of Minas department, Uruguay, 55 miles N. E. of Montevideo, on the railroad to Montevideo. Is center of farming and stock-raising district, with stone quarries. Pop. about 10,000.

MINAS GERAES (zhe-rīs'), the most populous state of Brazil, inland from Espirito Santo and S. of Bahia; area 222,894 square miles. Pop. (1917) 5,064,-858. Lying wholly in the tableland, its surface is occupied with grass and bush-covered campos, rising, however, in the Serra do Espinhaco to 5,900 feet; the principal rivers include the navigable Sao Francisco and the Rio Grande, which unites with the Paranahyba to form the Paraná. Agriculture and stock raising are the chief industries; some gold is still obtained, and diamonds, iron, and lead are mined. The inhabitants are principally Indians.

MINCIO (min'cho), ancient Mincius, a river of northern Italy. It flows from the southern extremity of Lake Garda, and after forming lakes and marshes around Mantua joins the Po, 8 miles beyond. It was a military base during the old wars between France and Austria, and is 115 miles long.

MIND, in popular language a word sometimes used as opposed to heart. Metaphysicians of the normal type, as a rule, contradistinguish it not from heart, but only from matter or body. They regard it as possessing emotions as well as intellectual powers; the former manifesting themselves in feeling, the latter in thought. Its existence is supposed to be established by the consciousness of the thinking individual. Till about the middle of the 19th century, mind was almost universally held to be possessed by none of the inferior animals; any apparent intelligence on their part was attributed to instinct. Darwin declared that the intellect and even the moral powers of man did not differ in kind, though very greatly in degree, from the rudiments of them exhibited by the lower animals. Not denying the latter instincts, he sought to establish that they had reason too, and that the superiority was the result chiefly of natural selection carried on through cosmic periods of time.

MINDANAO (mēn-dä-nä'ō), one of the Philippine Islands, next to Luzon in point of size; length about 300 miles, breadth 150 miles; area 36,292 square miles; pop. about 500,000. All the country, except on the sea-coast, is mountainous, the volcano of Apo being 8,819 feet high. Coffee, cocoa, and cotton are exported. The chief town is Zamboanga or Samboangan, a port and naval station at its W. extremity. Pop. about 30,000.

MINDEN, a town of Louisiana, the parish seat of Webster parish. It is on the Louisiana and Arkansas railroad. It is the center of an important cotton, corn, and sugar raising region. Its industries include saw mills, cottonseed oil mills and compresses. It has an excellent high school and three parks. Pop. (1910) 3,002; (1920) 6,105.

MINDEN, a Prussian town in Westphalia, on the Weser, 40 miles W. of Hanover; it has a fine new bridge (1874), a Gothic town hall, a Catholic church (till 1811 cathedral), built between the 11th century and 1379, and restored in 1864-1885, manufactures of tobacco, beer, brandy, glass, etc., and a considerable river trade. Till 1873 a fortress of the second class, it was already a town in Charlemagne's day, and suffered much in the Thirty Years' War, and again in the Seven Years' War, when, on Aug. 1, 1759, the French were defeated here by an Anglo-Hanoverian army under Ferdinand of Brunswick and Lord George Sackville. Pop. about 27,000.

MINDORO (mēn-dō'rō), one of the larger of the Philippine Islands, situated S. of Luzon, from which it is separated by the Strait of Manila; length about 110 miles, breadth about 53 miles; area 3,851 square miles; pop. about 30,000. The province of Mindoro, composed of Mindoro proper and groups of neighboring isles, has a population of about 40,-000. Rice, cacao, and wild cinnamon are the products.

MINERAL CAOUTCHOUC (köt'chŏk), a variety of bitumen, intermediate between the harder and softer kinds; sometimes resembling india-rubber.

MINERALOGY (-al'-), in natural history, a science treating of those natural inorganic products of the earth which possess definite physical and chemical characters. In 1669 Nicolas Steno, a Dane, made the discovery that in crystals of quartz the angles of inclination of adjoining faces were constant, and that the number of faces and their grouping, notwithstanding variations in size, were always the same. In this year also the doubly-refracting property of Iceland spar was observed. In 1772 Romé de l'Isle announced that the various shapes of crystals of the same product were intimately related. The Abbé Haüy in 1784 discovered that 10 forms, including six of de l'Isle, could be produced from various minerals by cleavage, and that these must be the true primitive forms. Professor Weiss, of Berlin (1809-1815), established fundamental lines, which he called axes, and to which he showed how all the primitive forms and secondary planes were related. Subsequently, though independently, Mohs (1820-1825) arrived at a division of crystals into four systems of crystallization which coincided with the four axial groups of Weiss. He also announced two other systems of crystallization, in consequence of more precise measurements being obtainable by the use of the reflective goniometer. The discovery by Malus in 1808 that a ray of ordinary light reflected at a certain angle from a glass plate possessed the same properties as that which emerged from Iceland spar, enabled Brewster in 1819 to point out the intimate relation which existed between the cleavage form of a mineral and its action on light.

The early attempts at classification were very vague, and were founded on supposed external differences, being divided into Earths, Stones, and Metals. Cronstedt's "Essay" (1758) was the first foreshadowing of a principle in a system of classification. The earths he classed as Calcareous, Siliceous, Argillaceous, and so on. Werner's last system divided fossils (as minerals were then called) into four classes: viz., Earthy, Saline, Combustible, and Metallic. The system of Haüy (1801), like that of Werner, was a mixed one, but it was the first to direct attention to the importance of crystallographic form to a system of classification.

MINERAL PRODUCTION, UNITED STATES. The table which appears on pages 242-243 gives the production of metals and minerals in the United States for 1918, with estimates of production for 1919.

MINERAL WATERS, waters so far impregnated with mineral matter as to give them a peculiar taste or smell, and specific medicinal properties, which may exert effects on the human body different than on ordinary water. They are usually divided into four classes—carbonetted, or those containing free carbonic acid gas; chalybeate, or those impregnated with iron; saline, containing considerable quantities of neutral salts, as sulphate of magnesia, chloride of sodium, etc.; and sulphurous, or waters containing sulphuretted hydrogen. The term mineral waters is also applied to artificial aërated waters. Natural mineral waters are generally connected with recent or extinct volcanoes, and they are most common in volcanic regions. Some are thermal.

MINERAL WAX. See OZOKERITE.

MINERS, WESTERN FEDERATION OF, a labor organization of employees of mines, smelters, etc., founded in 1893, on the industrial union principle, and now covering over two dozen States, mostly in the Rocky Mountain region. The Federation indorses socialism, its slogan being "labor produces all wealth; therefore all wealth belongs to those who produce it." It played a very prominent part in the Cripple Creek strikes, in 1894, when the militia was called into the field. It also backed the strike in the Coeur d'Alene Mines in Colorado, in 1899, when martial law was declared on account of the revolutionary violence of the strikers. The official organ of the organization is "The Miners' Magazine."

MINERSVILLE, a town in Schuylkill co., Pa., in the midst of the anthracite coal-mining district. Three railroads enter the borough, the Pennsylvania, Lehigh Valley, and the Reading. An electric road connects it with Pottsville. Pop. (1910) 7,240; (1920) 7,845.

MINERVA (mi-nur'vä), in Roman mythology, the goddess of wisdom and war, the liberal arts, science, and learning. She is reputed to have been the offspring of Jupiter's brain, without a mother. She is also called Athena, Pallas, Parthenos, Tritonia, Glaucopsis (Blue-Eyes), Agoræa, Hippia, Stratea, Area, Sais, etc., according to the arts she taught or the functions over which she presided. The serpent, the owl, and the cock were sacred to her; and among the plants, the olive. She was worshiped over all parts of Greece; but her great temple was the Parthenon at Athens, where she was the presiding goddess,

MINERAL PRODUCTS OF THE UNITED STATES IN 1918 AND 1919[1]

PRODUCT—METALLIC	Quantity—1918	Value	Quantity—1919	Value
Aluminum ..... pounds..	.....	$41,159,000	.....	$38,558,000
Antimonial lead ..... short tons (2,000 pounds)..	18,570	2,826,350	12,822	1,407,774
Antimony ..... " " ..	5,183	[2] 1,306,116	2,502	[2] 410,328
Bauxite ..... long tons (2,240 pounds)..	605,721	3,447,992	376,566	2,201,747
Cadmium ..... pounds..	127,164	188,203	99,939	121,926
Chromic iron ore ..... long tons..	82,430	3,955,567	3,900	87,000
Copper, sales value ..... pounds..	1,908,533,595	471,408,000	1,310,972,580	243,841,000
Ferroalloys ..... long tons..	750,868	115,433,943	[3]	[3] .....
Gold ..... troy ounces..	3,320,784	68,646,700	2,829,395	58,488,800
Iron—Ore ..... long tons..	72,021,202	[4] 244,368,147	56,319,000	[4] 203,274,000
Pig ..... " ..	38,230,440	1,180,759,565	30,646,000	809,246,000
Lead (refined) sales value ..... short tons..	539,905	76,667,000	431,000	45,686,000
Manganese ore (35 per cent. or more Mn) ..... long tons..	305,869	8,240,386	58,243	1,974,114
Manganiferous ore (5 to 35 per cent. Mn) ..... " ..	1,170,462	5,635,579	396,572	1,469,115
Nickel (value at New York City) ..... short tons..	441	401,000	1,511	434,485
Platinum and allied metals (value at New York City) ..... troy ounces..	59,753	6,417,980	45,109	5,614,335
Quicksilver (value at San Francisco) ..... flasks (75 pounds net)..	32,883	3,863,752	21,348	1,927,511
Silver ..... troy ounces..	67,810,139	66,485,129	55,285,196	61,966,412
Tin (metallic equivalent) ..... short tons..	69	118,500	60	78,600
Titanium ore (rutile) ..... " ..	261	39,150	96	20,000
Tungsten ore (60 per cent. concentrates) ..... " ..	5,068	6,650,000	330	357,000
Uranium and vanadium minerals ..... " ..	.....	957,000	.....	1,100,000
Zinc, sales value ..... " ..	492,405	89,618,000	452,272	66,032,000
Total value of metallic products (approximate)	.....	2,152,919,000	.....	1,373,400,000
PRODUCT—NON-METALLIC				
Arsenious oxide[5] ..... short tons..	6,323	1,213,000	6,029	[6] .....
Asbestos ..... " ..	802	121,687	1,031	311,750
Asphalt ..... " ..	587,609	8,216,012	715,000	10,000,000
Barytes (crude) ..... " ..	155,368	1,044,905	190,000	1,454,000
Borates ..... " ..	88,794	2,179,830	66,146	1,380,000
Bromine ..... pounds..	1,727,156	970,099	1,957,500	1,381,000
Calcium-magnesium chloride ..... short tons..	26,624	503,452	26,500	341,200
Cement ..... barrels (376 pounds net)..	71,348,474	113,554,854	86,013,000	145,058,000
Clay—Products	2,976,361	220,573,493	.....	260,790,000
Raw ..... short tons..	.....	[4] 8,332,641	2,363,000	[4] 7,077,000
Coal—Bituminous ..... " ..	579,385,820	1,491,809,940	458,063,000	[7] .....
Pennsylvania anthracite ..... long tons..	88,237,575	336,480,347	77,000,000	[7] .....
Coke ..... short tons..	56,478,372	[4] 382,324,368	44,821,000	[4] [8] .....
Diatomaceous (infusorial) earth and tripoli ..... " ..	[9] 22,947	224,801	[7]	[7] .....
Emery (also corundum in 1918) ..... " ..	10,422	112,878	2,000	42,000
Feldspar ..... " ..	99,120	674,346	[7]	[7] .....
Fluorspar ..... " ..	263,817	5,465,481	122,000	3,102,000
Fuller's earth ..... " ..	84,468	1,146,354	106,000	2,000,000
Garnet for abrasive purposes ..... " ..	4,696	248,161	4,865	303,437
Gems and precious stones	.....	106,523	.....	123,046
Graphite—Amorphous ..... short tons..	6,560	69,455	4,000	47,000
Crystalline ..... pounds..	12,861,839	1,454,799	7,434,000	696,000
Grindstones and pulpstones ..... " ..	65,339	1,776,282	[7]	[7] .....
Gypsum ..... short tons..	2,057,015	11,470,854	2,416,000	16,000,000

Lime ..... short tons..	3,206,016	26,808,909	2,976,000	27,023,000
Magnesite (crude) ..... " ..	231,605	1,812,601	164,696	1,652,094
Mica—Scrap ..... " ..	2,292	33,130	[7]	[7] .....
Sheet ..... pounds..	1,644,200	731,810	[7]	[7] .....
Millstones	.....	92,514	.....	[7] .....
Mineral paints—Natural pigments ..... short tons..	.....	.....	[10]	[10] .....
Zinc and lead pigments ..... " ..	135,746	26,464,590	155,648	25,810,671
Mineral waters ..... gallons sold..	40,709,722	4,533,001	43,718,153	4,384,657
Natural gas ..... M cubic feet..	721,000,959	153,553,560	638,600,000	159,650,000
Natural-gas gasoline ..... gallons..	282,535,550	50,363,535	[8]	63,500,000
Oilstones, etc ..... short tons..	1,010	189,033	[7]	[7] .....
Peat ..... " ..	107,261	1,047,243	76,301	860,841
Petroleum ..... barrels (42 gallons)..	355,927,716	703,943,961	377,719,000	775,000,000
Phosphate rock ..... long tons..	2,490,760	8,214,463	1,941,700	10,335,900
Potash (K_2O) ..... short tons..	38,580	15,839,618	[11] 29,989	[11] 7,246,448
Pumice ..... " ..	30,637	91,178	.....	[9] .....
Pyrite ..... long tons..	464,494	2,644,515	380,000	2,500,000
Salt ..... short tons..	7,238,744	26,940,361	7,064,500	27,296,000
Sand—Glass ..... " ..	2,172,887	4,209,728	1,690,000	3,090,000
Molding, building, etc., and gravel ..... " ..	59,651,539	33,717,351	58,506,000	34,729,000
Sand-lime brick ..... thousands..	98,399	883,929	145,000	1,724,000
Silica (quartz) ..... short tons..	71,740	2,159,330	[7]	[7] .....
Slate	.....	4,038,770	.....	5,065,000
Stone ..... short tons..	68,563,360	82,700,430	71,380,000	115,000,000
Sulphur ..... long tons..	1,266,709	27,868,000	670,000	16,750,000
Sulphuric acid (60° Baume) from copper and zinc smelters ..... short tons..	.....	.....	.....	.....
Talc and soapstone (exclusive of fibrous talc) ..... " ..	137,140	1,778,919	200,000	2,460,000
Talc, fibrous ..... " ..	71,167	902,100	.....	.....
Thorium minerals (monazite) ..... pounds..	.....	.....	.....	.....
Total value of nonmetallic products (approximate)	.....	3,379,080,000	.....	3,275,000,000
SUMMARY				
Total value of metallic products	.....	2,152,819,000	.....	1,373,400,000
Total value of nonmetallic products (exclusive of mineral fuels)	.....	642,929,000	.....	3,275,000,000
Total value of mineral fuels	.....	2,736,151,000	.....	.....
Total estimated value of "unspecified" (metallic and non-metallic) products[11] ...	.....	6,700,000	.....	5,300,000
Grand total approximate value of all mineral products	.....	5,538,699,000	.....	4,653,700,000

[1] Many of the figures for 1919 are estimated.

[2] Excluded from metallic totals, as the value of the antimony contained in antimonial lead is included in the antimonial lead value, and the remainder under last item ("unspecified").

[3] Figures for 1919 not yet available. Estimate of value included in total value of metallic products.

[4] Not included in total value.

[5] In addition to the arsenious oxide (white arsenic), metallic arsenic was produced in 1918 and 1919.

[6] Value included under last item ("unspecified"). Survey not at liberty to publish figures.

[7] Figures for 1919 not yet available. Estimate of value included in total value of non-metallic products.

[8] Figures not yet available.

[9] Exclusive of considerable production for special uses, value for which is included under last item ("unspecified").

[10] Canvass discontinued after 1915. Value of iron ore sold for paint, included under last item ("unspecified").

[11] Figures for 1919 represent production; figures of sales (as for 1918) not yet available. Production decreased 24,814 short tons, or 45 per cent. in quantity, and $14,271,220, or 66 per cent. in value in 1919, as compared with 1918.

[12] Includes products as follows: Antimony other than content of antimonial lead, optical fluorspar, metallic arsenic (also white arsenic in 1919), bismuth, cadmium sulphide, chats, chert, columbite (Ta_2O_5), cobalt concentrates, diatomaceous earth for special uses, flint lining for tube mills, ilmenite, iron ore sold for paint, lithium minerals, magnesium, marls, molybdenum, monazite sand, pebbles for grinding, selenium, silica sand and sandstone (finely ground), slate granules, sodium salts (carbonate, bicarbonate, and sulphate) from natural sources, strontium ore, tellurium, and an estimate of the value of miscellaneous mineral products, statistics for which are not collected annually by the Survey.

and in which fane there was a colossal statue of her, by Phidias, overlaid with ivory.

MINES, BUREAU OF, a bureau of the Department of the Interior, estab-



MINERVA

lished in 1910 for the purpose of conducting scientific and technologic investigations relating to mining and the preparation and utilization of mineral substances, with a view to the increase of health, safety, and efficiency. It has devoted much attention to the problem of mine gases, rescues from mine disasters, and first-aid training for miners. It cooperates in its investigations with the mining departments of all the colleges and universities which have such departments. In 1920 the bureau had 11 mining experiment stations, 9 mine safety cars, and 7 mine safety stations. During the World War the bureau co-operated with all the departments of the government in the investigation of minerals, ores, and metals especially needed. The work of the bureau has greatly decreased the fatalities from coal-mine accidents.

MINES, SUBMARINE. See SUBMARINES.

MINE WORKERS OF AMERICA, THE UNITED, one of the largest labor organizations in the United States, organized in 1890, on the basis of "industrial unionism," in contrast to the crafts system of organization of the American Federation of Labor. It includes all workers connected with the coal-mining industry, under the status of foreman. It is governed by a national executive board and twenty-five delegates, each representing a district. The organization made its first big gains in membership during the strike of the miners in the bituminous districts, in 1897, and during the successful strike in the anthracite districts, during 1900 and 1902, under the leadership of John Mitchell. In the fall of 1919 it attempted to organize a nation-wide strike of the workers in the coal industry, but was defeated by a Federal injunction and through lack of public sympathy. The official organ of the organization is "The United Mine Worker."

MINHO (mēn'yō), a river of Spain and Portugal, rising in the N. E. of Galicia, flowing S. W. through the Spanish provinces of Lugo and Orense, and, after forming the boundary between Portugal and Spain, falling into the Atlantic Ocean; total length, 174 miles; it is navigable for small craft 25 miles above its mouth; a bar at the entrance prevents the passage of large vessels. Area of basin, 157,000 square miles. Its chief tributary is the Sil, which joins it from the left.

MINIATURE PAINTING, the painting of portraits on a small scale. It originated in the practice of embellishing manuscript books. As the initial letters were written with red lead (Latin *minium*), the art of illumination was expressed by the Low Latin verb *miniare*,

and the term *miniatura* was applied to the small pictures introduced. After the invention of printing and engraving this delicate art entered on a new phase; copies in small dimensions of celebrated pictures came to be in considerable request, and, in particular, there arose a demand for miniature portraits. Holbein (1495-1543) painted exquisite miniatures, and having settled in London, his works had great influence in calling forth native talent. Isaac Oliver (1556-1617) was employed by Queen Elizabeth and most of the distinguished characters of the time; his works are remarkable for careful and elaborate execution. Richard Cosway (1740-1821) was one of the most famous miniaturists of the 18th century. The last famous miniature painter was Sir William Ross (1794-1860), who lived to see his art superseded by photography. Among early American miniature painters were Stuart, Copley, Peale, and Trumbull. As to technical details, the early artists painted on vellum and used body colors—*i. e.*, colors mixed with white or other opaque pigments; and this practice was continued till a comparatively late period, when thin leaves of ivory fixed on cardboard with gum were substituted. Many of the old miniature painters worked with oil colors on small plates of copper or silver. Miniature painting in the last decades of the 19th century and the first decade of the 20th gained favor, but it has made little progress in popularity. The American Society of Miniature Painters, founded in 1899, hold exhibitions annually in New York.

MINIMUM WAGE, a term applied to legislation tending to limit the downward tendency of wages, usually in favor of women. It is a part of that class of legislation which has been the entering wedge in the disruption of the old individualist principle that the field of industry and economics should be left entirely to free competition, or the law of supply and demand. It was in the Australian colony of Victoria that the first minimum wage legislation was enacted, with results so satisfactory to organized labor and its sympathizers that it became the subject of further agitation in Great Britain and the United States, beginning about 1905. By 1920 minimum wage statutes had been enacted in Ariz., Ark., Cal., Col., Utah, Wash., Wis., Dist. of Col., Kans., Mass., Minn., N. D., Oreg., and P. R. Because of constitutional limitations, as defined by the courts, it applies only to women and children. In Utah direct laws have been enacted, regulating minimum wage scales, while in other States the actual regulation is left to special commissions, with power to adapt the regulation to changing economic conditions.

MINING, the processes whereby minerals are obtained from their natural localities beneath the surface of the earth, and the subsequent operations by which many of them must be prepared for the purposes of the metallurgist. The art has been practiced from the remotest times. The coal mines of England are mentioned as early as 853 and the discovery of the Zwickau coal mines was made in the 10th century. In the 12th century the coal mines at Lüttich began to be exploited and in the 13th century the coal deposits at Newcastle, Wales, and Scotland were discovered. In the course of the 19th century, after the invention of the steam engine and the smelting of iron by means of coal and coke, mining was marvellously developed. Coal has been discovered in Australia, New Zealand, Borneo, China, and Japan. Great Britain has larger deposits than any other country in Europe. Next to these in amount of output are the coal mines of Belgium and France. In Germany those along the Rhine and in Westphalia, and in Saxony, Bohemia, and Silesia, are of great importance.

Various machines have been invented with a view to lessen the labor and expense of under-cutting coal seams. They work with compressed air or electricity, some on the principle of the reciprocating rock drill, while others have the cutters arranged on the periphery of a rotating disk, or on a traveling pitch-chain. The coal, when broken down, is placed in wagons and drawn by horses, mules, traction rope, locomotive, or trolley, to the bottom of the shaft and raised to the surface.

The actual mode of working the coal varies greatly in every district. By the post-and-stall, or bord-and-pillar, or room-and-pillar, or (in Scotland) stoop-and-room, method the first stage of excavation is accomplished with the roof sustained by coal; in the long wall method the whole of the coal is allowed to settle behind the miners, no sustaining pillars of coal being left. This when well planned is the safer both as regards facility of ventilation and liability to accidents from falls. In Pennsylvania anthracite beds, which are mostly highly inclined, the workmen often work on the coal broken down in driving the "breast" upward; this broken-down coal being drawn off from below at intervals to give the workmen room to work. When the breast has been extended upward to its

full length the broken-down coal is all removed. Later when the breasts in one section of the mine are all worked out the sustaining pillars between them are "robbed" or removed, allowing the roof to fall.

In working metalliferous veins horizontal galleries termed "levels" are driven by the lode usually 50 to 100 feet apart. They are rarely perpendicularly above one another, as they follow the inclination of the vein. The levels are connected by means of small shafts, termed "winzes." Represented on a vertical plane, the vein will thus be seen to be cut up into pillars which are worked by the method of "stoping." In underhand stoping, the ore is gradually worked away downward from the floor of one level, the ore and worthless mineral being taken out through the level next below. This method is especially adapted for working any valuable ores, as the loss is small. The overhand method, in which the miners stand on timber platforms and break down the mineral above them, is more economical, so far as cost of excavation is concerned; but the loss of ore is greater than by underhand stoping, and hence it is best adapted for the working of low-grade ores.

Placer Gold-Mining.—Many deposits of gold ores, as those first worked in California and those of the Klondike, are in the gravel or sand in the present or ancient stream beds. Such deposits are called "placers." In working these deposits in the beds of existing streams, the course of the stream may be deflected by a dam and sluice, and the water of the stream utilized for separating the gold from the gravel which may be dug from the stream bed. In the case of larger streams, mechanical dredges remove the material from the bottom, which after separation of the gold is returned to the stream bed. In the old placers which are abandoned stream courses, generally above water level, hydraulic mining is resorted to. A stream of water from 6 to 12 inches in diameter and under the pressure caused by a head of several hundred feet is directed on the hillside where the old placer outcrops and rapidly washes it away. The material thus removed is sorted by the same water and the gold separated.

The progressive legislation in connection with mines has proved beneficial in diminishing the proportion borne by the accidents to the number of miners employed. Great improvements have recently been made in sinking shafts, safety lamps, underground haulage, coal-cutting machinery, worked by compressed air and electricity, and pumping apparatus. Better methods of sorting, picking, and washing coal have been adopted. Good progress has also been made in the application of steel girders as props and bars, and in reducing the cost of coal consumed at collieries. By means of forced draught and better mechanical stoking much coal practically unsalable has been utilized to great advantage. But by far the most appreciable good that has been done in connection with mining in recent years has been the scientific investigations carried on by the BUREAU OF MINES (*q. v.*) respecting the causation and prevention of explosions in coal mines, and improved means recommended and adopted to diminish, if not minimize, these disasters, where many lives have been lost and much valuable property has been destroyed.

In England and Ireland the crown has the right to all mines of gold and silver; but where these metals are found in mines of tin, copper, iron or other baser metal, then the crown has only the right to take the ore at a price fixed by statute. In Scotland gold mines belong to the crown without limitation, and silver mines when three-halfpence of silver can be extracted from the pound of lead. As a general rule, in the United States as well as in Great Britain, whoever is the owner of freehold land has a right to all the mines underneath the surface, for his absolute ownership extends to the center of the earth; but under special grants and contracts it is not uncommon for one person to be owner of the surface of the land and another to be owner of the mines beneath; or several persons may be owners of different kinds of mines lying one above the other in different strata. On the public lands of the United States, a title or license may be obtained by any citizen from the general land office at Washington, at the rate of $5 per acre of surface pre-empted.

MINING ENGINEERS AMERICAN INSTITUTE OF, association established in 1871, having among its objects the development of the arts and sciences associated with the mining of minerals and metals and their uses in trade, and the publication of information connected with the industry and profession. The institute has its central offices in New York City and issues several publications in the course of the year, including the "Annual Transactions," and a monthly "Bulletin." It holds periodical meetings and has a membership approaching 6,000.

MINIUM, the red oxide of lead, often designated red lead and commonly used as a pigment for ordinary purposes.

MINIVER, the Siberian squirrel, which has fine white fur; also the fur itself.

MINK, a popular name for several species of the genus *Putorius*, which are found in the N. parts of both hemispheres, and are valuable as fur-producing animals. *P. lutreola* is the European, and *P. vison* the American mink. The body is stouter than that of a stoat or weasel, and from 15 to 18 inches long. The color varies from dull yellowish-brown to dark chocolate brown; the upper lip is usually white in the European, dark in the American species. It is mostly found in northern and southern parts of the United States, and successful attempts have been made to breed the mink on farms.

MINNEAPOLIS, a city and county-seat of Hennepin co., Minn.; on both banks of the Mississippi river; the celebrated Falls of St. Anthony being in the heart of the city; adjoining St. Paul, with which it is connected by railway and electric lines; area 53 square miles; pop. (1910) 301,408; (1920) 380,498.

Municipal Improvements.—The city has an excellent system of streets, made according to the latest practice. An extensive and beautiful park system has been constructed. The annual death rate averages 14.33 per 1,000. In proportion to population, Minneapolis has a greater park area than any other city in the United States. There are many bridges across the river, several being massive structures of stone and steel. The Great Northern Railroad's stone viaduct is a magnificent specimen of engineering.

Notable Buildings.—There are many beautiful residences and substantial business blocks. Among the more notable buildings are the City Hall and Court House; Metropolitan Life Building; Metropolitan Bank Building; First National-Soo Line Building; Radisson Hotel; La Salle Building; Plymouth Building; Minneapolis Institute of Arts; the Postoffice; the Auditorium; Central High School; the University buildings; Syndicate Block; Nicollet House; Lumber Exchange; Northwestern National Bank, and many notable private residences. Of the many churches, several are models of church architecture.

Manufactures.—Minneapolis is the largest flour manufacturing place in the world. The value of the output is about $100,000,000 yearly. It is also a great lumber-producing center. Other important industries are the manufacture of agricultural implements, machinery, building material, furniture, boots and shoes, wagons, woolen goods, etc. The value of the manufactured products is estimated at about $300,000,000.

Education.—In 1919 the enrollment in the public schools was 58,533. There were 1,723 teachers. The expenditure for educational purposes was $3,025,162. The institutions for higher learning are the University of Minnesota, St. Thomas College (R. C.), Augsburg Theological Seminary (Scand. Luth.), and the Minneapolis Academy; and in the suburbs are Hamline University and Macalester College. There is a handsome public library.

Finances.—In 1919 there was a net debt of $20,633,306. The assessed valuations were, real estate $163,710,251; personal property $42,783,312; tax rate, $39.43 per $1,000. The expenditures are about $9,000,000 yearly.

History. — Minneapolis was settled on the W. bank of the Mississippi river in 1849. It received its charter as a city in 1867, and annexed St. Anthony, which had been founded earlier on the opposite bank in 1872. In 1898 a "home rule" charter was submitted to the people, but failed to be adopted.

MINNEHAHA, FALLS OF, the name given to a beautiful cascade in the Minnehaha river near Minneapolis, Minn., the word Minnehaha meaning in the Indian language "Laughing Water." The cascade falls 60 feet into a most picturesque glen which opens on the Mississippi river. Longfellow has immortalized the name.

MINNEQUA SPRINGS (min'-), chalybeate sulphur waters in Bradford co., Pa.

MINNESINGERS, a class of German lyric poets of the 12th and 13th centuries, so called from love being the chief theme of their verse. They consisted almost exclusively of men of aristocratic birth, the most prominent names being Wolfram von Eschenbach, Gottfried von Strassburg, Hartmann von der Aue, and Walther von der Vogelweide. They sang their lyrics to the accompaniment of the viol, generally in honor of the high-born dames. The songs, chiefly in the Swabian dialect, were seldom written down by their authors, and the manuscripts which contain their verse are mostly the result of oral traditions and repetitions. This remarkable poetical movement gradually merged into that other class of German lyric poets called MEISTERSINGERS (*q. v.*).

MINNESOTA, a State in the North Central Division of the United States; bounded by Manitoba, Ontario, Lake Superior, Wisconsin, Iowa, North Dakota, and South Dakota; admitted to the Union May 11, 1858; counties, 86; area, 79,205 square miles; pop. (1890) 1,301,826; (1900) 1,751,394; (1910) 2,075,708; (1920) 2,387,125; capital, St. Paul.

Topography.—The surface of Minnesota is undulating, with no mountains but having a broad low elevation in the N., 280 miles in length. This elevation constitutes the watershed for three great basins, the Mississippi, the St. Lawrence and the Hudson bay. This elevation is about 1,000 feet above the S. of the State toward which it descends in a gradual slope. There are several elevated plains W. of the Mississippi, of which the Coteau des Prairies, and the Coteau de Grand Bois, are the most extensive. The principal river system is the Mississippi which has its source in this State. The principal affluents of this river are the Minnesota, the Root, Zumbrota, Cannon, Crow Wing, Willow, St. Croix, and Rum. The Red river of the North forms over half the W. boundary line of the State and is fed by the Buffalo, Wild Rice, and Red Lake. Many small streams flow into Lake Superior, and several discharge into Rainy Lake river, and the chain of lakes running along the N. boundary. The State has numerous large lakes, including Red Lake, Leech, Mille Lacs, Vermilion, Big Stone, Traverse, Otter Tail, Itasca, and Winnebegoshish. The Mississippi river has numerous beautiful waterfalls, the largest being the Falls of St. Anthony, and the cascade of Minnehaha.

Geology.—The rocks of the N. and S. E. portions of the State are of Lower Silurian origin, and the river valleys are underlaid by magnesium limestone. The lake shore is principally of metamorphic origin, with schists, alternating with sandstone, basalt, and occasional drift deposits.

Soil.—The soil is of alluvial deposit of great richness, and especially adaptable to wheat-growing. It is a rich loam from two to five feet in depth. The top covering of the land known as "black dirt" is due to the residuum of prairie fires and accumulations of decayed vegetation. The climate is less rigorous than usual in such latitudes. The winters are long, and the temperature even, with but little snow. Annual rainfall from 20 to 30 inches. The principal forest trees are the oak, beech, elm and maple; spruce, pine, and other coniferous trees; ash, birch, linden, basswood, butternut, wild plum, and crab apple.

Mineralogy.—The N. E. portion of the State is known as the mineral region and is rich in mineral resources.

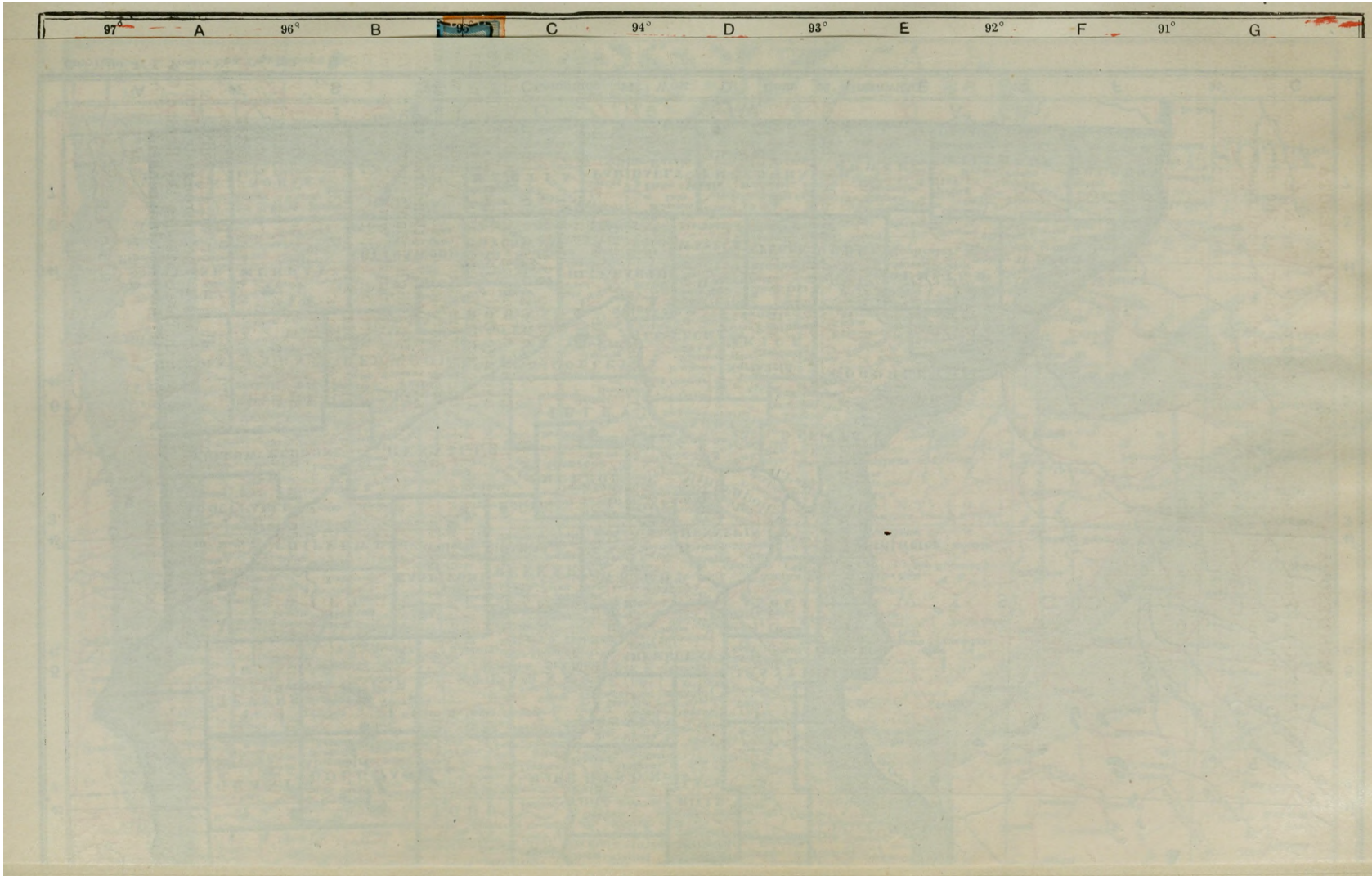
Mineral Production.—Minnesota's high rank as a mineral producing State comes entirely from its iron production. In this it ranks first. There was shipped from the mines of the State in 1918, 43,263,240 tons of iron ore, valued at $144,706,532. The larger part of the production comes from the Mesabi Range, which is the most important iron-producing district in the world. Production was begun in this field in 1892 and has steadily increased. The output from the Vermilion Range has decreased in recent years. The only other important mineral products are clay and stone.

Agriculture.—Minnesota is one of the great agricultural States. The production of the principal crops in 1919 was as follows: corn, 118,000,000 bushels, valued at $141,600,000; oats, 90,160,000 bushels, valued at $57,702,000; barley, 18,200,000 bushels, valued at $21,112,000; wheat, 37,710,000 bushels, valued at $94,276,000; rye, 7,830,000 bushels, valued at $10,179,000; hay, 3,800,000 tons, valued at $55,100,000; potatoes, 26,100,000 bushels, valued at $39,933,000.

Banking.—On Oct. 1, 1919, there were reported 309 National banks in operation, with $33,606,000 in capital, $14,122,000 in outstanding circulation, and $81,249,000 in United States bonds. There were also 1,120 State banks with $24,753,000 capital and $9,342,000 surplus; 19 trust and loan companies, with $5,551,000 capital and $1,440,000 surplus. The exchanges for the year ending Sept. 30, 1919, at the United States clearing houses at Minneapolis and St. Paul amounted to $3,181,855,000.

Education.—The enrollment of the public schools is about 500,000, with an average daily attendance of 375,000. The teachers numbered about 18,000. In 1919 there were 236 high schools in which were enrolled 45,457 pupils, with an average yearly attendance of 37,422. Under the high schools there were 179,637 graded pupils, with an average daily attendance of 148,913, with 5,260 teachers. There are normal schools at Winona, Mankato, St. Cloud, Moorehead, and Duluth. The University of Minnesota is a part of the educational system of the State. Other institutions of higher learning are Carleton College, Hamline University, Macalester College, and Gustavus Adolphus College. Albert Lea College is for women only.

Churches.—The strongest denominations in the State are the Roman Catholic; Lutheran, Independent Synods; Methodist Episcopal; Lutheran Synod-


97°
A
96°
B
95°
C
94°
D
93°
E
92°
F
91°
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MINNESOTA
SCALE OF STATUTE MILES
SCALE OF KILOMETERS
County Towns
Railroads
Longitude 94° West from 93° Greenwich
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ical Conference; Lutheran General Council; Regular Baptist; Presbyterian; Congregational; and Protestant Episcopal.

Transportation.—The railroad mileage of the State is about 9,000. The lines having the longest mileage are the Great Northern, 2,100; Minneapolis, St. Paul and Sault Ste. Marie, 1,131; Chicago, Milwaukee and St. Paul, 1,233; and the Northern Pacific, 1,021.

Finance.—The total revenue of the State for the fiscal year ending June 30th, 1919, was $32,493,164, while the total expenditures were $33,689,641. The balance at the beginning of the year was $8,153,000 and at the end of the year was $6,986,513. The State has no bonded debt.

Charities and Corrections.—The State Board of Control has control over 13 of the charitable and correctional institutions. Among these are the St. Peter State Hospital, the State Hospital at Rochester, the State Hospital at Fergus Falls, State Asylum at Onaka, State Asylum at Hastings, and schools for the feeble-minded, deaf, and blind at Faribault.

State Government.—The governor is elected for a term of two years. Legislative sessions are held biennially beginning on Tuesday after the first Monday of January, and are limited to 90 days each. The Legislature has 67 members in the Senate and 131 in the House. There are ten Representatives in Congress. The State government in 1920 was Republican.

History.—The site of the present State of Minnesota was first visited by a French exploring party under Louis Hennepin, a Franciscan priest, who ascended the Mississippi river as far as the Great Falls. By the treaty of Versailles in 1763, this region was ceded to Great Britain, and in 1766 it was explored by Jonathan Carver, a native of Connecticut. In 1783 the Northwest Territory, including Minnesota, E. of the Mississippi, was ceded to the United States. No attempt was made to extinguish the Indian title till 1805, when a purchase was made of a tract of land for military purposes at the mouth of the St. Croix, and another at the mouth of the Minnesota river, including St. Anthony's Falls. In 1827 a small tract of country between the St. Croix and Mississippi was ceded by the Indians to the United States, and lumbering operations commenced upon the St. Croix. The Territory of Minnesota was established, and the government organized in 1849. It embraced nearly twice the area of the present State, its W. limits extending to the Missouri and White Earth rivers. In 1851 the Sioux ceded to the United States all their lands in the territory between the Mississippi and Big Sioux rivers and in 1858 Minnesota was admitted to the Union. That portion of the State lying E. of the Mississippi belonged originally to the "territory N. W. of the Ohio," while that portion W. of the Mississippi was included in the territory known as the Louisiana Purchase. In 1862 the Indians attacked the frontier settlements, and in a few days killed about 800 settlers. In consequence the Sioux and Winnebagoes were removed from the State, and their lands opened to settlement.

MINNESOTA RIVER, a river in the United States, which flows through Minnesota and falls into the Mississippi 5 miles above St. Paul; length, 470 miles.

MINNESOTA, UNIVERSITY OF, a coeducational, non-sectarian institution in Minneapolis, Minn.; founded in 1868; reported at the close of 1919: Professors and instructors, 976; students, 7,451; volumes in library, 280,000; income, $4,337,094; president, Marion Le Roy Burton.

MINNOW, or **MINIM**, in ichthyology, *Leuciscus phoxinus*, common all over Europe; its average size is about three inches. It is generally found in the same streams with trout, swimming in schools. Known also as the minim. Also a popular name in the United States for the small fishes of many genera of *Cyprinidæ*.

MINOR PROPHETS, THE, so-called from the brevity of their writings, are 12 in number, viz., Hosea, Joel, Amos, Obadiah, Jonah, Micah, Nahum, Habakkuk, Zephaniah, Haggai, Zechariah, and Malachi.

MINORCA, the second largest of the BALEARIC ISLANDS (*q. v.*), lying 25 miles N. E. of Majorca; length, 28 miles, average width, 10 miles; area, 293 square miles; pop. about 45,000. Its coast is rocky and inaccessible, but broken by numerous inlets, and its surface low, undulating, and stony. Its productions and climate are similar to those of Majorca, though the soil is less fertile. Chief towns, Port Mahon and Ciudadela (8,000). The island is remarkable for its great number of ancient megalithic remains (called talayots) and its stalactite caves (at Prella).

MINOS, in Greek mythology, a ruler of Crete. During his lifetime he was celebrated as a wise lawgiver and after his death he was made, with Æacus and Rhadamanthus, one of the judges of the infernal world. Also another legendary King of Crete, who forced Athens to

send yearly seven boys and seven girls to be devoured by the Minotaur.

MINOT, a city of North Dakota, the county-seat of Ward co., situated on the Mouse river, 200 miles W. N. W. of Grand Forks, and on the Great Northern, the Minneapolis, St. Paul, and Sault Ste. Marie railroads. It contains the State Normal School, a public library, court house, and Federal buildings. It is the center of a mining and milling region. The mines are of lignite coal. Pop. (1910) 6,188; (1920) 10,476.

MINOTAUR (min'-), in Greek mythology, a monster half man and half bull, said to have been the son of Pasiphaë, wife of Minos, King of Crete, by a bull; hence the term Minotaur. Minos shut him up in the labyrinth of Dædalus, feeding him with criminals, and afterward with youths and maidens sent from Athens. Theseus, by the assistance of Ariadne, succeeded in destroying him.

MINOT'S LEDGE, or COHASSET ROCKS, in Massachusetts, a promontory and lighthouse on the S. W. shore of Boston Harbor, about 8 miles S. E. of Boston Light; it exhibits a fixed light 66 feet high.

MINSK, chief town of Lithuania, on an affluent of the Beresina, 331 miles E. N. E. of Warsaw; existed in the 11th century; was Lithuanian in the 13th; Polish in the 15th; and was annexed by Russia in 1793; pop. about 120,000. The province of Minsk has a generally flat surface, and abounds in marshes, swamps, moors, lakes, and forests; area, 35,293 square miles; pop. about 3,000,000; less than 24 per cent. of the total area is actually cultivated. Self-governing since 1919.

MINSTER, the church of an abbey or priory; but often applied, like the German "Münster," to cathedral churches without any monastic connection.

MINSTREL (Old French *menestrel, menestral*), a singer and performer on musical instruments. Minstrels in the Middle Ages were a class of men who lived by the arts of poetry and music. The minstrels or jongleurs only recited or chanted poems, but did not write or invent them; or perhaps accompanied on some instrument the troubadour, who sang his own compositions. It was not an unusual thing for a troubadour to have several minstrels or jongleurs in his service. The minstrels in later times formed a separate guild, uniting for the purposes of mutual protection and support. With the decline of chivalry, the profession of the minstrel also declined, and eventually sank so low that they are classed among vagabonds and beggars in statutes in the reign of Elizabeth.

In the United States a term used to describe a negro stage singer of Southern negro songs, or a white singer blacked up to sing such songs.

MINT, the name given to several herbaceous aromatic plants of the genus *Mentha*, distributed throughout temperate regions; and they abound in resinous dots which contain an essential oil. Spearmint is generally used, mixed with vinegar and sugar, in sauce. Peppermint yields the well-known stimulating oil of the same name. Pennyroyal is used for the same purposes.

MINT, the place where a country's coinage is made and issued under special regulations and with public authority. In former times the coinage was made by contact at a fixed price. The present mint on Tower Hill, in London, was erected between the years 1810 and 1815. The English mint supplies the whole of the coinage of the British Empire, except Australia and the East Indies. In the United States there are mints at Philadelphia, established in 1792; at San Francisco, established in 1853; and at Denver, established in 1862.

In the United States the Bureau of the Mint was established as a division of the Treasury Department in 1873. It has charge of the coinage for the government and makes assays of precious metals for private owners. The rolling machines are four in number. The rollers are adjustable, and the space between them is governed by the operator. About 200 ingots are run through per hour on each pair of rollers. When the rolling is completed the strip is about six feet long. As it is impossible to roll perfectly true, it is necessary to "draw" these strips, after being softened by annealing. The drawing benches resemble long tables, with a bench on either side, at one end of which is an iron box secured to the table. In this are fastened two perpendicular steel cylinders. These are at the same distance apart that the thickness of the strip is required to be. It is drawn between the cylinders, which reduces the whole to an equal thickness. These strips are now taken to the cutting machines, each of which will cut 225 planchets per minute. The press now used consists of a vertical steel punch. From a strip worth $1,100 about $800 of planchets will be cut. These are then removed to the adjusting room, where they are adjusted. After

inspection they are weighed on very accurate scales. If a planchet is too heavy, but near the weight, it is filed off at the edges; if too heavy for filing, it is thrown aside with the light ones to be remelted. The planchets, after being adjusted, are taken to the coining and milling rooms, and are passed through the milling machine. The planchets are fed to this machine through an upright tube, and as they descend are caught on the edge of a revolving wheel and carried about a quarter of a revolution, during which the edge is compressed and forced up. By this apparatus 560 half-dimes can be milled in a minute; for large pieces the average is 120. The massive but delicate coining presses coin from 80 to 100 pieces a minute.

MINTO, GILBERT JOHN MURRAY KYNYMOND ELLIOT, 4th EARL OF, an English military officer; born July 9, 1847. He was educated at Eton and Cambridge; served with the Turkish army (1877); in the Afghan War (1879); was private secretary to General Lord Roberts at the Cape (1881); military secretary to the governor-general of Canada (the Marquis of Lansdowne) 1883-1885; chief of staff in N. W. Canadian rebellion (1885); Brigadier-General commanding S. Scotland infantry (1888); Governor-General of Canada (1898-(1904); Viceroy of India (1905-1910). Died 1914.

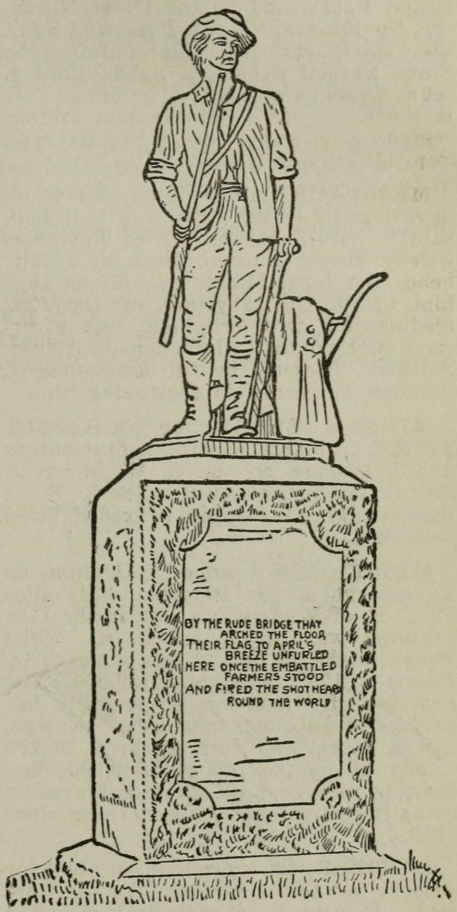
MINUS, as a substantive, less. A term applied to the sign of subtraction —.

MINUSINSK, a town of Siberia in the government of Yeniseisk on the Yenisei river. It has important mining industries and a considerable trade in grain and cattle. It is the capital of the district of the same name. Pop. about 16,000.

MINUTE, a division of time and of angular measure. As a division of time it is the 60th part of an hour. As a division of angular measure it is the 60th part of a degree. In astronomical works, minutes of time are denoted by the initial letter *m*, and minutes of a degree or of angular space, by an acute accent (′).

MINUTE MEN, in the American Revolutionary War, the militia, who were prepared for service at a minute's notice. They were mostly civilians of Massachusetts, enrolled by act of the provincial government passed Nov. 23, 1774. In Boston alone there were 16,000 prepared to serve.

MIOCENE, in geology, a term introduced in 1835 by Sir Charles Lyell to designate the beds formerly called Middle Tertiary. The term Miocene denotes that only a minority of the shells belong to recent species. Beyrich separated from it its lower portion, and, combining this with the Upper Eocene, founded a new division, the Oligocene.



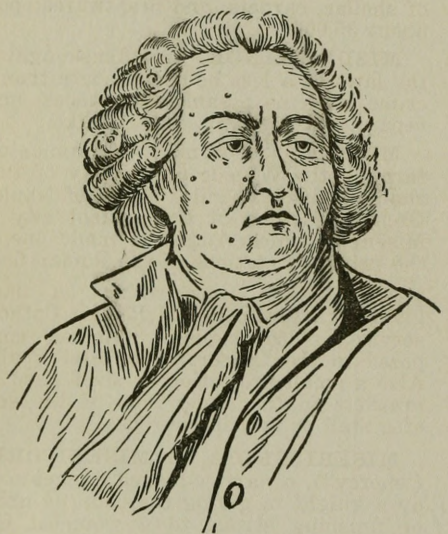
THE "MINUTE-MAN" STATUE AT CONCORD, MASS.

MIQUELON (mēk-lo*ng*′), an island in the Atlantic off the S. coast of Newfoundland, forming with ST. PIERRE (*q. v.*) a French colony, and belonging to France. The S. part, Little Miquelon, or Langley Island, was once a separate isle, but since 1783 has been joined to Great Miquelon by a sand bank. Discovered by Sebastian Cabot in 1497. A commandant at St. Pierre represents the French government. Area 83 square miles; pop. (1918) 4,652. Fishing is nearly the sole occupation.

MIR (mēr), the Russian commune, consisting of the inhabitants of one or more villages, who are as a community owners of the surrounding land, and redistribute the same to the members from time to time. It is self-governing, but under bureaucratic control. Under the Soviet Republic, 1918, the Mir was never entirely suppressed, and continued, in spite of the Bolshevik government, in some parts of Russia.

MIRA (mē'rä), or **STELLA MIRA** (the wonderful star), the star Omicron Ceti, a remarkable variable, whence the name. It is in the neck of "the whale." Its variability was discovered in 1596 by Fabricus.

MIRABEAU (mē-rä-bō'), **ANDRÉ BONIFACE RIQUETI, VICOMTE DE,** a French royalist, brother of Honoré Gabriel de Mirabeau; born in Bignon,



MIRABEAU

Provence, France, Nov. 30, 1754. From an early age he was notorious for his ill-regulated life and for a thirst that earned him the nickname of "Barrel Mirabeau." He fought with distinction in the American war, and at the outbreak of the Revolution was returned to the States-General by the nobility of Limoges. After the death of his brother he quitted France, and raised on the Rhine the "Hussars of Death," a legion of embittered émigres, with whom he began in 1792 a bloody partisan warfare against his country. He was run through by accident in Freiburg, Baden, Sept. 15, 1792.

MIRABEAU, HONORÉ GABRIEL RIQUETI, COUNT DE, one of the most celebrated characters of the French Revolution; born in Bignon, Provence, France, March 9, 1749. He was the son of the Marquis Victor Riquetti de Mirabeau, an author on political economy. On leaving school, he entered the military service; and his intercourse with young and dissipated officers familiarized him with all their vices. His father procured his confinement in a fortress on the island of Rhé. After his liberation he went, as a volunteer, to Corsica, distinguished himself, and obtained a commission as a captain of dragoons; but his father refusing to purchase him a regiment, he abandoned, though unwillingly, the military profession. In 1772 he espoused a rich heiress of Aix, but he soon squandered the fortune he received with her and plunged himself in debt. In 1784 he visited London, and afterward Berlin, being sent to the latter city on a secret political mission; and he was variously employed in literary quarrels and occupations till the commencement of the French Revolution.

He was elected for Aix and Marseilles as deputy of the third estate, and was chosen president in January, 1791. At length he entered into a treaty with the court, to use his influence in stopping the progress of republicanism. Before, however, he could carry his intentions into effect, a sudden illness terminated his existence in Paris, France, April 2, 1791. His remains were honored with a public funeral, and deposited in the Pantheon.

MIRACLE PLAYS, a sort of dramatic entertainments common in the Middle Ages, in which the subjects were taken from the lives of saints and the miracles they wrought. They were originally performed in church, but latterly outside, in market places and elsewhere. In England they were first produced in the 12th century.

MIRAGE (mē-räzh'), an optical illusion by which images of distant objects or scenes appear inverted, and generally in mid-air. The phenomenon is best observed in the Egyptian or other deserts, though occasionally seen elsewhere. The soldiers of Napoleon I., when in Egypt, were much tantalized by the mirage; and Monge, who accompanied the expedition, was the first to explain the illusion. The layers of air in contact with the heated soil are rarefied and expanded more than those immediately above them; a ray of light from an elevated object has to traverse strata of air less and less refracting, and the angle of in-

cidence continually increases in amount till refraction gives place to internal reflection. According to the varying density of the strata of air the mirage varies in character.

MIRAMICHI (mir-a-mi-shē'), the second river of New Brunswick, entering the Gulf of St. Lawrence through Miramichi Bay; length 220 miles.

MIRAMÓN, MIGUEL, a Mexican military officer; born in the City of Mexico, Sept. 29, 1832; fought at Chapultepec in 1847 and commissioned a Colonel. In 1855 joined insurrection and took Puebla; was captured, escaped, and began guerilla warfare. In 1858 when Zuloaga became president he was made a Brigadier-General; in December, 1858, the government of Zuloaga was overthrown and in January, 1859, Miramón was chosen provisional president of the Conservative government. He was defeated by the forces of the Liberal party at the battle of Calpulálpam on Dec. 22, 1860, and soon afterward fled to Europe. When the regency was installed in 1863 he returned to Mexico, but his services were declined and he was again compelled to flee the country. Later, however, his offer was accepted by Maximilian and he returned in November, 1866. He was placed in command of a division which suffered defeat at the battle of San Jacinto, Feb. 1, 1867. Subsequently he was captured and shot with Maximilian and Mejía in Queretaro, June 19, 1867.

MIRANDA, state of Venezuela, bordering N. coast of Caribbean Sea. Mountainous, pastoral, and agricultural. Produce includes coffee, cocoa, sugarcane, maize, cotton, beans, etc. Cattle breeding is on a large scale. Region one of the richest in republic. Capital, Ocumare. Pop. (1917) 175,810.

MIRBEAU, OCTAVE, a French novelist and dramatist; born at Trevières 1850. His first novel, "Jean Marcelin," was published in 1885. "Lettres de la Chaumière" (1886) brought his name into prominence. His other novels are "L'Abbé Jules" (1888); "Sébastien Roch" (1890); "Le Jardin des Supplices" (1899); "Memoires d'une Femme de Chambre" (1901). His other books are "Les Vingt-et-un Jours d'un Neurasthénique" (1902) and "Dans l'Antichambre" (1905). For the stage he wrote "Les Mauvais Bergers" and "Les Affaires sont les Affaires." The latter was produced in New York as "Business is Business" in 1905. Died in 1917.

MIRIAM, the sister of Moses and Aaron, probably the one who watched over Moses in the ark of bulrushes (Ex. ii: 4, 5; Num. xxvi: 59; Mic. vi: 4). Died at Kadeshbarnea (Num. xx: 1).

MIRROR, a smooth surface capable of regularly reflecting a great proportion of the rays of light that fall on it. The dangers arising from mirror making come chiefly from the use of the quicksilver. A process has been devised by which mirrors are rendered translucent, without impairing their power of reflection.

MIRZA, a Persian title, equivalent to "Prince" when it follows the surname, and merely the common title of honor (like "Mr.") when it is prefixed to it.

MIRZAPUR (mēr-zä-pör'), a district in the Northwestern provinces, British India; area 5,223 square miles; pop. about 1,200,000, almost all Hindus. Capital, Mirzapur; situated on the right bank of the Ganges; has manufactures of shellac, carpets, and brasswares; pop. about 35,000.

MISDEMEANOR, an offense against the laws of a less heinous nature than a crime, such as assaults, nuisances, nonrepair of a highway, and the like.

MISENO (mē-sā'nō), a promontory forming the W. side of the Bay of Pozzuoli (Cumæ), 10 miles N. W. of Naples. On it are ruins of the ancient city of Misenum, which Augustus made one of the principal stations of the Roman fleet.

MISERERE (miz-ur-ā're), a name given to a psalm in the Roman Catholic service. Also a piece of music composed to the "Miserere" or 51st Psalm. Also a small projection or shelf fixed on brackets in the under side of the seat of a stall or pew in churches.

MISERICORDIA, or **MISERICORDE** ("mercy"), a narrow-bladed dagger used by a knight in giving the coup de grâce or finishing stroke to a wounded foe. Also the name of a society (of laymen) in Florence, founded in the 13th century, who tend the poor sick, carry victims of accidents or disease to the hospitals, and the dead to their burial.

MISHAWAKA, a city of St. Joseph co., Ind., and the county-seat, situated on the St. Joseph river and the Grand Trunk and the Lake Shore and Michigan Southern railroads. The city is an industrial center with good waterpower, and its products include rubber goods, plows, cement blocks, machine shop products, automobiles and supplies, cigars, and leather goods. It contains an orphans' home, a hospital, a public library, several parks, and a high school. Pop. (1910) 11,886; (1920) 15,195.

MISIONES (mē-se-ō'nes), an Argentine territory; lying between the Uruguay and the Paraná; bounded on all sides but the S. W. by Brazil and Paraguay; area 23,932 square miles; pop. (1918) 57,544. The greater portion of the surface is covered with forest, producing building and dye-woods, oranges, medicinal herbs, and the yerba maté. Maize is largely grown and sugar-cane.

MISKOLCZ, a city of Hungary, in the county of Borsod. It has many important public buildings and prior to the World War had an extensive trade in wine, agricultural products, and cattle. There were manufactories of flour, shoes, china, etc. Pop. about 52,000.

MISPRISION, in law, every such high offense as is under the degree of capital, but nearly bordering thereon. Misprisions are either negative, which consist in the concealment of something which ought to be revealed; or positive, which consist in the commission of something which ought not to be done. Of the first or negative kind, is "misprision of treason," consisting in the bare knowledge and concealment of treason, without any degree of assent thereto, for any assent makes the party a traitor. "Misprision of felony" is also the concealment of a felony which a man knows, but never assented to, for if he assented, this makes him either principal or accessory.

MISSAL, the book containing the whole service of the mass throughout the year. In its present arrangement it dates from about the middle of the 14th century. The Roman missal is used generally throughout the Roman Church, though the Ambrosian obtains in the diocese of Milan, and many religious orders have their own missals, differing only in unimportant particulars from the Roman. Eastern Christians of the Communion with Rome have missals peculiar to their own rite.

MISSIONS, an organized method of propagating a religion: specifically, the propagandism of Christianity among the heathen.

Apostolic and Mediæval Missions.— The Gospel made great progress during the lifetime of the apostles and found a footing in most countries to the E. and N. of the Mediterranean. It was also successfully introduced into Egypt and other African regions. As the result of persecutions thousands of converts were scattered abroad and Christian churches were founded in Persia, Mesopotamia, and Arabia. Within a century after Christ the Gospel had probably been preached over a large part of the Roman world. Alexandria early became noted for its missionary college from which teachers were sent to all parts of the world. By the close of the 2d century also Carthage had its church with Tertullian at its head. In 306 19 bishops assembled at Elvira in Spain. The Goths and Vandals came down on the Roman empire from the N. and carried away many Christian captives. Ulfilas, the descendant of one of these, translated the Bible into Gothic and is regarded as the Apostle of the Goths. Before the time of Constantine there were churches of considerable extent in the S. and N. sections of Britain, due not so much to missionaries as to the natural intercourse of Britain with Rome. These churches, however, became distinguished for their missionary zeal and Saint Patrick is commonly regarded as their leader. He found Ireland entirely heathen and lived to see it become Christian. As the Scotch Patrick was the apostle to Ireland, so in a certain way was the Irish Colomba the apostle of Scotland. The island of Iona with its monastery became a sort of missionary center and Aidan went from there to Northumbria and established missions. The Scotch-Irish missionaries were the evangelists of a large part of the European continent. Columbanus, Gallus, and "a host of others numerous as a swarm of bees," introduced, together with religion, agriculture and civilization into France, Switzerland, and other parts of Europe. The English Boniface became the apostle of Germany. Ansgar, a monk of Corvey in the 9th century, under the influence of Louis the Pious, preached in Denmark and Sweden. The Russian prince Vladimir was baptized in 988 with all of his sons (in the Dnieper at Kief) and his people. Kublai Khan, a grandson of the famous Genghis Khan, a ruler of the E. Mongol empire, sent for missionaries to tell him about the new doctrine. It is supposed that the Nestorian-Tartar church flourished till the country was devastated by the Mongols. It is almost certain that the Nestorians introduced the Gospel into India and that they passed through Tartary into China and founded churches there which existed till the end of the 9th century. As early as the year 1200 Albert I. of Appeldern went with a band of pilgrims to the mouth of the Düna river and founded the city of Riga and established there the Brotherhood of the Knights of Christ, or the Brethren of the Sword. He has been called the Bishop of Livonia. One of the most remarkable missionaries of the Middle Ages was Raymond Lully.

The Roman Catholics after the discovery of the new world founded several missionary orders, chief among which were the Jesuits, Capuchins, Dominicans, and Franciscans. Their object was the extension of the Church among the Mussulmans of Spain, north Africa, and western Asia. Francis Xavier was sent as an apostolic nuncio for India, and worked with wonderful success in all parts of India and the islands of the Chinese archipelago. He labored for years with success in Japan. In 1622 Pope Gregory XV. established a society for the propagation of the Gospel, and that has ever since controlled the mission enterprises of the Church. It has its seat in Rome where there is a college for the training of missionary priests.

Protestant Missions.—In 1555 a company of men including several missionaries sailed for Brazil with a hope of establishing there an asylum for the Huguenots, but it was unsuccessful. In 1559 Gustavus Vasa sent a missionary to Lapland, but it was more than half a century before the country was Christianized. In 1612 a college for the training of missionaries was established at the University of Leyden and a few years later the Dutch introduced Christianity into Java. Their success was so great that 100,000 Christians were counted there in 1721 and a single missionary in Formosa had baptized nearly 6,000 adults and taught 600 of the natives to read. In Ceylon alone the Dutch Church in 1722 reckoned over 240,000 members. John Eliot, "the apostle of the Indians," came to America early in the 17th century under the auspices of the Corporation for the Spread of the Gospel in New England. The Society for the Propagation of the Gospel in Foreign Parts was founded in 1701 for work among the British colonies rather than among pagans. Early in the 18th century the first Protestant mission was sent to India. It was projected by the King of Denmark, and continued throughout the greater part of the 18th century. At first, and for a long time, Germany supplied the missionaries; but the pecuniary support of the mission soon devolved on England, Prince George of Denmark, the husband of Queen Anne, having recommended the object of the Society for Promoting Christian Knowledge. In 1847 the entire mission passed into the hands of the Leipsic Society. In 1731 Count Zinzendorf, the patron of the United Brethren called the Moravians, visited Copenhagen and there saw two Eskimos and a negro boy from the Danish West Indies. When he returned he told the story and two of the Moravians resolved to go to St. Thomas and teach the slaves the Gospel. This was the beginning of the missionary enterprises of the Moravians. Their work from their first beginnings in St. Thomas and Greenland in 1732 to their latest undertaking in the Tibetan Himalayas is most interesting.

In 1786 Thomas Coke, the Methodist who had been sent to Nova Scotia, was driven to the West Indies by a storm. The story which he brought back of heathen conditions was the foundation of the Methodist missions. William Carey was the first English Protestant to engage personally in the work, which led to the foundation of the Calvinist Baptist Society for Propagating the Gospel among the Heathen and in 1793 he, with his family, set sail for India and landed at Calcutta where he laid the foundations of the later missions in Asia. In 1794 an address to professors of the Gospel calling for the support of at least 20 or 30 missionaries among the heathen was published. This led to the foundation of the London Missionary Society which began its work by the dispatch to the South Seas of 29 missionaries. In 1818 the mission in Madagascar was established. The Church of England felt the impulse of missions and in 1799 started a society for missions to Africa and the East which was afterward called the Church Missionary Society for Africa and the East. Henry Martyn, the pioneer missionary, had intended to go out under their auspices but he went out as a British chaplain. Their first expedition was to west Africa. They went to New Zealand in 1814, the Levant in 1815, India in 1816, and Ceylon in 1817. Work among the Indians of northwest America in 1826, work in equatorial Africa in 1844, in China in 1845 and in Japan in 1869 was carried on by this remarkable society. The Wesleyan Missionary Society was formed in 1814 and entered the field in south Africa. Missions in New South Wales were established in 1815, in Tasmania in 1821, among the Maoris of New Zealand in 1822, in the Friendly Islands in 1826, in the Fiji Islands in 1834, in Victoria in 1838, in Queensland in 1850, and in China in 1853.

The American Board of Missions was organized at Bradford, Mass., June 29, 1810. In January, 1812, the first missionaries sailed to India, but when they reached Calcutta they were ordered home by the British East India Company, on the ground that commercial interests would be jeopardized if any attempt were made to interfere with the religious faith of the Hindus. Two of

the missionaries to India changed their views in regard to baptism and this led to the formation of the American Baptist Missionary Union in May, 1814. The Ceylon mission was begun in 1816 and a foreign mission school was founded at Cornwall, Conn., in the same year, but the school was abandoned in 1826. Missions were opened among the Cherokee Indians in 1817 and among the Choctaws in 1819. The first mission in the Hawaiian Islands was established in 1819. The first missionary to China went out in 1829. In 1830 missions were established in Asia Minor and Persia and in 1831 in Athens. The Gabun mission in west Africa was sent out in 1834 and that to the Zulus in south Africa in 1835; that in Japan in 1869.

The first mission work of the Presbyterian Church was directed to the evangelization of India. The Western Missionary Society was organized in Fitchburg about the close of the 18th century. In 1818 the United Foreign Missionary Society was formed but did not enter the foreign field. The Presbyterians worked through the American Board till 1870. In 1870 the Presbyterian Board of Missions was formed and took charge of the Persian, Syrian, and Gabun missions. The missionary society of the Methodist Church was organized in 1819. In 1835 they established the Brazil Mission. The first Methodist missionaries to China sailed in 1847, to Bulgaria in 1852, to India in 1856, to Japan in 1872, to Mexico in 1873, to Korea in 1885 and to Malaysia in 1889.

A Domestic Foreign Missionary Society of the Episcopal Church was founded in 1835, occupying China in the same year, Japan in 1859, and Haiti in 1861.

The World War checked missionary advance, but great progress has since been made. At the Foreign Missionary Conference of North America held in New York the annual income was stated to be $20,400,000 as compared with $16,935,741 in 1915.

MISSISSIPPI, a State in the South Central Division of the United States, bounded by Tennessee, Alabama, Louisiana, Arkansas, and the Gulf of Mexico; admitted to the Union, Dec. 10, 1817; area, 46,340 square miles; pop. (1900) 1,551,270; (1910) 1,797,114; (1920) 1,790,618; capital, Jackson.

Topography.—The State is divided into two portions by a low broad watershed between, the rivers flowing toward the Atlantic, and the streams emptying into the Mississippi. A lateral branch of this ridge terminates in the bluff of Vicksburg. E. of this ridge, the surface of the State consists of broad rolling prairies, while to the W. the land is broken into valleys and ridges. The State is very low, the highest altitude being but 800 feet. Mississippi is well watered. Flowing W. from the central watershed are the Homochitto, Big Black, Yazoo, Sunflower, and Tallahatchie rivers, all emptying into the Mississippi, which forms the entire W. boundary line. On the E. of the ridge are Pearl river, the Pascagoula, and Tombigbee, all emptying into the Gulf of Mexico. A chain of islands extends along the coast, separated from it by Mississippi sound. the largest being the Cat Islands, Petit Bois, Horse, and Ship Islands. There is but one good harbor on the Gulf coast, Ship Harbor, the mouths of all the rivers being swampy. The principal ports on the Mississippi river are Vicksburg and Natchez. Mississippi is often called the Bayou State.

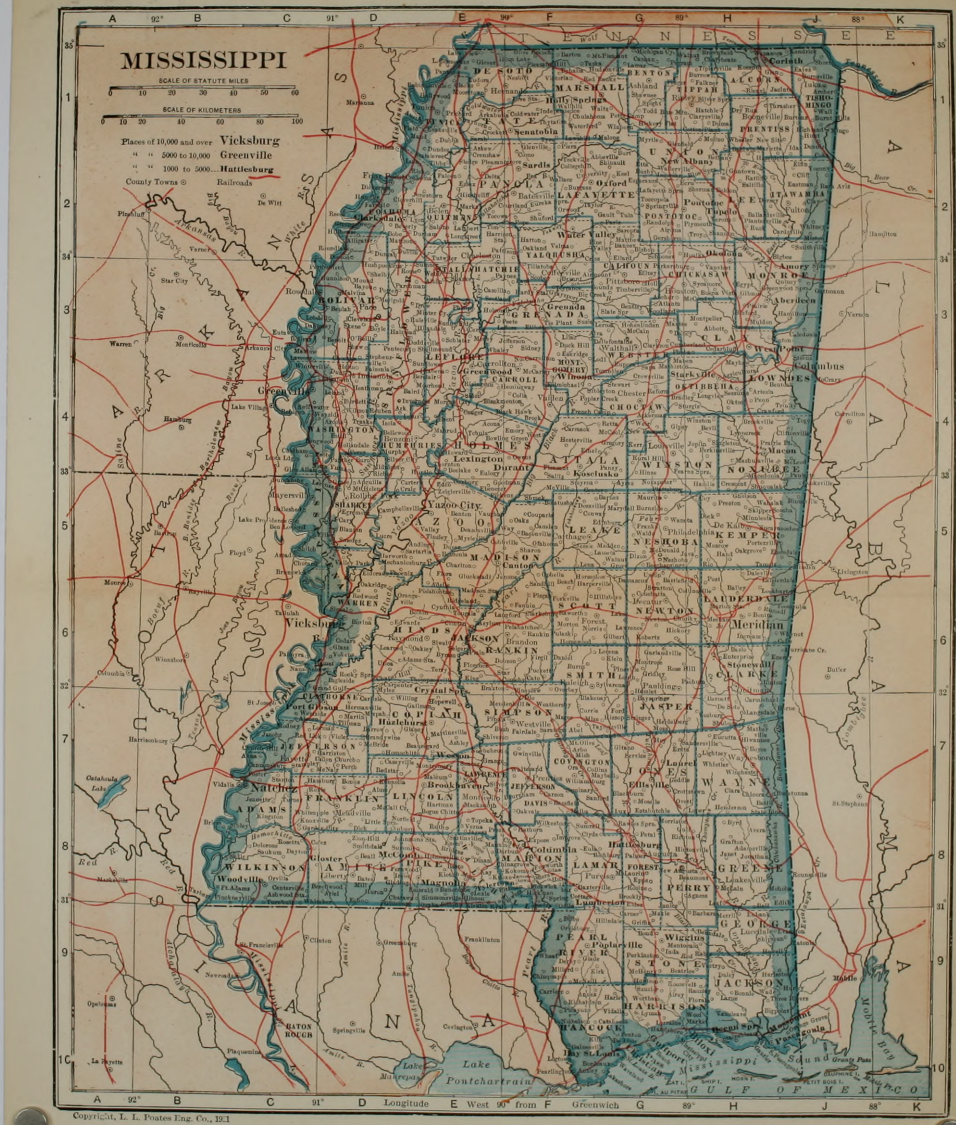
Geology.—The geological formations of Mississippi are principally of the Carboniferous, Cretaceous, Tertiary, and post-Tertiary periods. In the N. the Carboniferous is represented by the limestones and sandstones along the Tennessee river. S. of this are four groups of Cretaceous limestone, bounded on the W. by silicious deposits of Tertiary formations. This region abounds in brown coal, pipe and fire clay, and mineral fertilizers. The alluvial or Quaternary period is represented in the bottom lands of the Mississippi river. An orange sand of post-Tertiary formation is found over the entire S. portion of the State. Fossil remains of a gigantic marine animal resembling the alligator are found in the prairie regions.

Mineral Production.—The only mineral products of the State are clay, sand and gravel and mineral water. The total value of this is about $1,000,000.

Soil.—In the N. section and the uplands of the central portion the soil is very fertile, but the land in the Mississippi bottoms, though of exceeding fertility in places, contains much clayey and wet ground. The prairie lands are, as a rule, quite fertile. The most fertile land in the State is in the Yazoo delta, in the extreme W. part of the State, N. of Vicksburg. Mississippi has still a vast area covered by virgin forests. The principal trees are the oak, willow, chestnut, wateroak, walnut, butternut, dogwood, black gum, sweet gum, beech, cottonwood, sycamore, magnolia, locust, mulberry, hickory, pine, cypress, and live oak.

Agriculture.—The prairie region in the N. W. of the State has always been noted


A
92°
B
C
91°
D
E
90°
F
G
89°
H
J
88°
K



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as having the best farming land in the South. The most important agricultural product is cotton, although corn is produced in large quantities. The production and value of the principal crops in 1919 were as follows: Corn, 59,700,000 bushels, valued at $95,520,000; oats, 5,282,000 bushels, valued at $5,546,000; hay, 648,000 tons, valued at $13,284,000; potatoes, 1,530,000 bushels, valued at $2,830,000; sweet potatoes, 10,290,000 bushels, valued at $11,525,000; cotton, 946,000 bales, valued at $177,375,000.

Banking.—On Oct. 31, 1919, there were reported 33 National banks in operation, with $3,750,000 in capital, $2,227,443 in outstanding circulation, and $2,740,250 in United States bonds. There were also 293 State banks, with $10,262,000 capital, and $5,093,000 surplus.

Manufactures. — The State is not among the most important industrially. There were in 1914, 2,209 manufacturing establishments giving employment to 42,702 wage earners. The capital invested was $81,006,000; the amount paid wage earners was $19,177,000; the value of the materials used was $41,340,000; and the value of the completed product was $79,550,000.

Education.—There are about 800,000 school children in the State. There is no compulsory school law. Separate schools are maintained for white and colored children, and in recent years the legislature was somewhat backward in passing laws tending to improve educational conditions, but beginning with 1910 several important measures have been passed. These included provisions for consolidation of schools, the establishment of agricultural high schools, and the creation of a text book commission and of a supervisor of elementary rural schools. There is a normal school at Hattiesburg, and a normal school for colored students at Shelby. The institutions for higher education include the University of Mississippi, Mississippi Agricultural and Mechanical College, Mississippi College, and Millsaps College. There are also several colleges for women.

Churches.—The strongest denominations in the State are the Regular Baptist, colored; Regular Baptist, Methodist Episcopal, South African Methodist; Methodist Episcopal; Roman Catholic; Presbyterian, South; Cumberland Presbyterian; Disciples of Christ, and Protestant Episcopal.

Charities and Corrections.—The charitable and correctional institutions include the State Charitable Hospital at Jackson, State Charitable Hospital at Vicksburg, State Charitable Hospital at Natchez, State Insane Asylum at Asylum, and State Charitable Asylum at Meridian.

Railroads.—The railway mileage in the State was 4,480. The principal railroads are the Illinois Central, 679 miles, the Yazoo and Mississippi Valley, 1,144, and the Mobile and Ohio, 315.

State Government.—The governor is elected for a term of four years. Legislative sessions are held quadrennially, beginning on Tuesday after the first Monday of January, and are unlimited as to length of session. The legislature is Democratic. There are 7 representatives in Congress. The State government in 1920 was Democratic.

History.—Mississippi was originally part of the colony of Louisiana, being settled by the French in 1716. In 1728 the settlers were nearly exterminated by the Indians, and in 1763 the territory was ceded to Great Britain. At the end of the Revolution it became a territory of the United States, and was admitted to the Union as a Federal State Dec. 10, 1817. In 1861 it passed an ordinance of secession, took a prominent part in the Civil War, and finally, in February, 1870, was readmitted to representation in Congress, after ratifying the 15th amendment. Amendments to the State constitution were made in 1875 and 1877. Since the war the State has made much progress, and has entered a state of continued prosperity.

MISSISSIPPI AGRICULTURAL AND MECHANICAL COLLEGE, an institution maintained by the State of Mississippi to further scientific agriculture and industrial education. It was founded in 1878 and is located at Agricultural College, Miss. Residents in the State receive free tuition, others pay a fee of $100 per year, the course leading to a degree lasting two years. The College is one in which instruction is military drill and government is given and a United States Army officer is detailed for service there. The students all wear a uniform prescribed by the authorities. The enrollment is approximately 1,200, with a faculty of 105.

MISSISSIPPI COLLEGE, an educational institution in Clinton, Miss.; founded in 1826 under the auspices of the Baptist Church; reported at the close of 1919: Professors and instructors, 16; students, 475; president J. W. Provine.

MISSISSIPPI RIVER (from an Indian word signifying Great Water, or Father of Waters), a river of the United States, forming with its tributaries one of the great water systems of the world.

From the headwaters of the Missouri, which is now recognized as the parent stream (the upper Mississippi being really a tributary), to the mouth of the Mississippi is a distance of 4,200 miles, the longest river course in the world. It drains an area of 1,246,000 square miles, occupied by the States lying between the Appalachian mountains on the E, the Rocky Mountains on the W., the Great Lakes on the N., and the Gulf of Mexico on the S. The Mississippi forms the boundary between the States of Minnesota (in part), Iowa, Missouri, Arkansas, and Louisiana (in part) on the W. bank, and Illinois, Kentucky, Tennesse, and Mississippi on the E. bank. There are several cataracts, the best known being the Falls of St. Anthony at Minneapolis, Minn., marking the headwaters of navigation. The principal affluents above the entrance of the Missouri are the St. Peter's, St. Croix, Chippewa, Wisconsin, Rock, Des Moines and Illinois. Below the junction of the Missouri, the character of the river, which is here about one and a half miles broad, and of a muddy nature, is due to its tributary. The united waters have only, from their confluence to the mouth of the Ohio, a medial width of about three-quarters of a mile. The junction of the Ohio seems also to produce no increase, but rather a decrease, of surface; and the river, in its natural state, is still narrower at New Orleans, which is only 120 miles from its mouth. About 190 miles below the confluence of the Missouri, the Mississippi receives the Ohio, flowing, with its light-green stream, from the E., bringing with it also the waters of its tributaries. About 380 miles below the influx of the Ohio, is the junction of the Arkansas and White rivers, which enter the main stream close to each other on the W. bank. Thence to the confluence of the Red river is a distance, S. by W., of 360 miles, measured along the stream; and below this latter point the river trends S. E., and enters the Gulf of Mexico, after a course of 335 miles from the Red river.

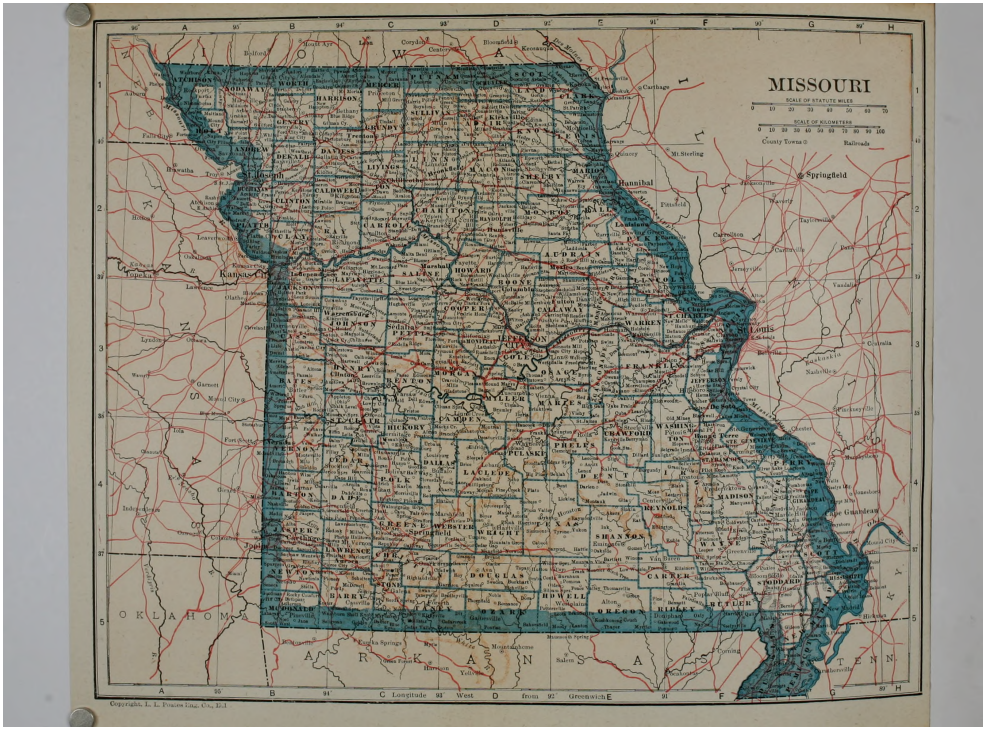
The lower part of the Mississippi is so much flooded after the rainy season that there is often a space of inundated woodland from 30 to 100 miles in width; large swamps and bayous, also, are found, during the whole year, on both sides the river. The Mississippi is subject to inundations, often destructive in their effects. To secure the land from these inundations, immense embarkments, or levees, as they are generally called, have been formed along the Mississippi, and the canals or bayous through which its waters overflow. The white waters of the Mississippi do not readily mix with the sea, and may be distinguished from 9 to 14 miles from Balize. The facilities afforded by the Mississippi and its various tributaries for internal navigation are unsurpassed. De Soto, 1541, was the first European who explored the Mississippi. He died upon it, and was buried in it. Marquette and Joliet in 1673, and La Salle in 1682, made explorations, the latter descending to its mouth.

MISSISSIPPI SCHEME, a bubble scheme projected by John Law in Paris in 1717 for the colonization and development of the Mississippi valley, combined with a banking scheme and a scheme for the management of the National debt, the whole supported by the French government. Shares originally issued at 500 livres (say $100) were sold at 10, 20, 30, and even 40 times their value. The state took advantage of the popular frenzy to issue increased quantities of paper money, which was readily accepted and invested in shares of Law's company. This went on till the value of the paper money became depreciated in value and the shares fell in price. Law, the originator of the bankrupt company, fled from France in 1720; the State acknowledged itself debtor to the shareholders to the extent of $340,000,000 (See LAW, JOHN).

MISSISSIPPI, UNIVERSITY OF, a coeducational, non-sectarian institution in University, Miss.; founded in 1844; reported at the close of 1919: Professors and instructors, 34; students, 607; volumes in the library, 31,000; productive funds, $700,000; chancellor, Joseph Neely Powers, LL. D.

MISSOLONGHI (-long'gē) (Mesolongion), a seaport town of Greece, on the N. shore of the Gulf of Patras. In 1821-1822, the Turks invested it for 3 months, and again in 1825-1826, when the garrison, reduced from 5,000 to 3,000, cut their way out, carrying with them a large number of women and children. There is a statue (1835) over the grave of Bozzaris, and another (1881) of Lord Byron, on the spot where his heart is interred. Pop. about 11,000.

MISSOULA, a city of Montana and the county-seat of Missoula co., 125 miles N. of Helena. Situated on the Missoula river and on the Chicago, Milwaukee, and St. Paul and the Northern Pacific railroads. It contains the State university, a Carnegie Library, Federal buildings, hospitals, and an excellent high school. The chief industries are farming, fruit growing, lumbering and mining, of all of which it is an important


MISSOURI
SCALE OF STATUTE MILES
SCALE OF KILOMETERS
County Towns
Railroads
Springfield
St. Louis
Kansas City
Hannibal
OKLAHOMA
ARKANSAS
Longitude West from Greenwich

center. It is governed by the commission form of government. Pop. (1910) 12,869; (1920) 12,668.

MISSOURI, a river of the United States; formed in the Rocky Mountains, in Montana, winds circuitously along the base of the mountains, then E. till it reaches the W. boundary of North Dakota and receives the Yellowstone. Here it begins to flow S. E. through North and South Dakota, then forms the E. boundary of Nebraska, separating it from Iowa and Missouri; separates for a short distance Kansas from Missouri, then strikes E. across the latter State, and joins the Mississippi after a course of 2,908 miles. It is navigable 2,500 miles from the Mississippi.

MISSOURI, a State in the South Central Division of the United States, bounded by Iowa, Illinois, Kentucky, Tennessee, Arkansas, Oklahoma, Kansas, and Nebraska; admitted to the Union, Aug. 10, 1821; counties, 115; area, 68,735 square miles; pop. (1900) 3,108,665; (1910) 3,293,335; (1920) 3,404,055; capital, Jefferson City.

Topography.—Though the surface of the State presents no considerable elevations, it is greatly diversified. In the S. W. part are the Ozark Mountains, a series of isolated knobs, peaks, and cliffs of sandstone, some reaching an altitude of 1,500 feet. The Mississippi river, forming the E. boundary line, is bordered by highlands in the shape of limestone bluffs, in some cases reaching a height of 350 feet. W. of these highlands the State is high and broken, becoming more and more level till the Osage river is reached. The principal rivers are the Mississippi, having a course of 470 miles along the E. boundary, the Missouri, which forms 200 miles of the W. boundary, and turning E. crosses the State, and flows 250 miles to the Mississippi. The Osage, St. Francis, Black, White, Gasconade, Current, Grand, and Charlton are all navigable for small boats at high water. Among unnavigable streams of importance are the Platte, Sac, Piney, Castor, Salt, South Grand, Nodaway, Fabrus, Meramec, Cuivre, and Niaugua rivers.

Geology.—The geological formations of Missouri are principally of Carboniferous origin, especially in the N. and W. Devonian rocks occur in the N. E. and S. W., extending in a S. direction toward St. Louis. The S. of the State is principally of Silurian formation, and the rocks include shale, limestone, conglomerate, and sandstone. Granite, greenstone, porphyry, and other Eozoic and Archean rocks occur in the S. and S. W.

Mineral Products.—The chief mineral products of the State are zinc and lead, in the production of which it ranks first among the States. The total value of the lead and zinc concentrates produced in 1918 was $37,763,394; the production of lead concentrates was 287,983 short tons, valued at $21,988,567. The quantity of zinc blende concentrate sold from the Missouri mines was 95,555 tons, valued at $4,899,347. The chief production is from the central and southeastern part of the State. Copper is also produced in the State. The production in 1918 was 577,665 pounds, valued at $142,683. The silver production was 46,939 fine ounces, valued at $46,939. The State produces a considerable amount of coal. The production in 1918 was 5,605,000 tons. There were employed in the coal mines of the State about 8,000 persons. Gold is found in small quantities. Other important mineral products are sulphuret of nickel, manganese, wolfram, gypsum, asbestos, bitumen, fire clay, kaolin, hydraulic lime, saltpeter, and mica.

Soil.—The soil is generally fertile, excepting on the hills, where it is mixed with such a proportion of iron oxides as to make it unproductive. The alluvial deposits of the Mississippi and Missouri are exceedingly fertile, and the swamps, when drained, yield enormous crops. The prairies produce tobacco and wheat of the best quality. Only about one-third of the State is cultivated, the remainder being to a large extent densely timbered. The principal forest trees are the elm, ash, oak, sugar maple, hackberry, dogwood, sassafras, sweet gum, black gum, calapa, tupelo, pawpaw, and pecan. Yellow pine grows abundantly around the head waters of the Black, White, and Current rivers, and extensive pine forests extend also along the Arkansas border.

Agriculture.—Missouri ranks among the first of the States in its importance in agricultural products. The production and value of the principal crops in 1919 was as follows: Corn, 155,412,000 bushels, valued at $214,459,000; oats, 38,259,000 bushels, valued at $27,164,000; wheat, 57,868,000 bushels, valued at $120,982,000; hay, 3,794,000 tons, valued at $73,983,000; potatoes, 8,250,000 bushels, valued at $15,180,000; cotton, 60,000 bales, valued at $10,200,000. Other important crops are pear, clover, flax, hemp, garden fruits, and barley. Agricultural and creamery products, such as butter, cheese, barley, sorghum, beeswax, wine, and maple syrup, and molasses, are all developed to a high standard. Much of the territory N. of the Missouri river is covered with blue

grass and is finely adapted to stock-raising.

Manufactures.—The industrial establishments are centered chiefly in the larger cities, St. Louis and Kansas City. There were, in 1914, 8,386 manufacturing establishments with an average number of 152,182 wage earners. The capital invested amounted to $522,548,000. The amount paid in wages was $89,197,000. The value of materials used was $388,-715,000, and the value of the products $637,552,000.

Banking.—On Oct. 31, 1919, there were reported 137 National banks in operation, with $45,995,000 in capital, $7,669,-136 in outstanding circulation, and $22,-311,850 in United States bonds. There were also 1,325 State banks, with $41,-323,000 capital and 24,464,000 surplus; 6 private banks, with $65,000 capital and $168,000 surplus; and 82 trust and loan companies, with $22,423,000 capital and a surplus of $19,477,000. The exchanges for the year ending Sept. 30, 1919, at the United States clearing house at St. Louis and Kansas City amounted to $19,101,774,000.

Education.—There were, in 1919, 721,-752 children enrolled in the public schools. Of these 528,455 were an average daily attendance. The number of teachers was 20,208, with an average monthly salary of $69.19. The total amount expended for schools was $17,-780,426. Compulsory education was provided by the legislature in 1909. Agriculture is taught in the high schools. Enrolled in the high schools are about 50,000 pupils. There are five normal schools. Among the institutions for higher learning are Washington University at St. Louis, University of Missouri at Columbia, St. Louis University at St. Louis, Missouri Wesleyan College at Cameron, Christian University at Canton, Central College at Fayette. There are several colleges for women.

Churches.—The strongest denominations in the State are the Roman Catholic; Regular Baptist, South; Disciples of Christ, Methodist Episcopal, South; Methodist Episcopal; German Evangelical Synod; Cumberland Presbyterian; Lutheran, Synod, Conference; Regular Baptist, Colored; Presbyterian, North; African Methodist; Presbyterian, South.

Finance.—The receipts for the fiscal year ending Dec. 31, 1919, amounted to $25,062,337 and the disbursements to $23,233,925. The balance on hand at the end of the year was $5,791,823. The State debt amounted to about $6,500,000.

Railways.—The railway mileage in 1919 was 9,382. The longest roads within the State were the St. Louis and San Francisco, and the Chicago, Burlington and Quincy.

Charities and Corrections.—The State Board of Charities and Corrections has supervision of the charitable and correctional institutions, which include hospitals at Fulton, St. Joseph, Nevada, and Farmington. There is an industrial school for boys at Booneville and schools for the deaf, blind, and epileptic.

State Government.—The governor is elected for a term of four years. Legislative sessions are held biennially beginning on Wednesday after the first Monday of January, and are unlimited as to length of session. The legislature has 34 members in the Senate and 142 in the House. There are 16 representatives in Congress. The State government in 1920 was Democratic.

History.—Missouri was first visited by the whites, under De Soto in 1541, and under Marquette in 1673. Early in the 18th century a brisk trade in furs between the French and the Indians led to French settlement. St. Louis, St. Genevieve, and other towns were founded about the middle of the century, but in 1762, after the conquest of New France by the English, this country was transferred to Spain. It was restored to France in 1800, and purchased by the United States in 1803, as part of the Louisiana Purchase. In 1812, a portion of Louisiana was set aside as the Territory of Missouri, and in 1821 it was admitted into the Union as a State. The question of its admission gave rise to a long and bitter political controversy in the halls of Congress, the South wishing to make of it a slave State and the North vigorously resisting. The dispute was at length settled by a compromise offered by Henry Clay, to the effect that slavery should be permitted in Missouri, but forever excluded from all other parts of the Louisiana Purchase N. of lat. 36° 30′. In 1836 Missouri was reduced from its Territorial to its present State limits. On the outbreak of the Civil War the people of Missouri were divided in sentiment, and both sides took up arms. Many conflicts took place in the State, but the activity of the Union party saved it from secession. After the war bitter feeling died away, improvements began, and the State entered upon a career of prosperity which has since continued.

MISSOURI COMPROMISE, a term given to a compromise under an act of Congress passed in February, 1821, at which time Missouri was admitted into the Union as a slave State, declaring that all territory W. of Missouri and N. of lat. 36° 30′ (the S. boundary of Mis-



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EXPLORERS ON THE SOUTHERN SIDE OF MT. McKINLEY, ALASKA. THIS IS THE HIGHEST PEAK IN NORTH AMERICA

Enc. Vol. 6—p. 260

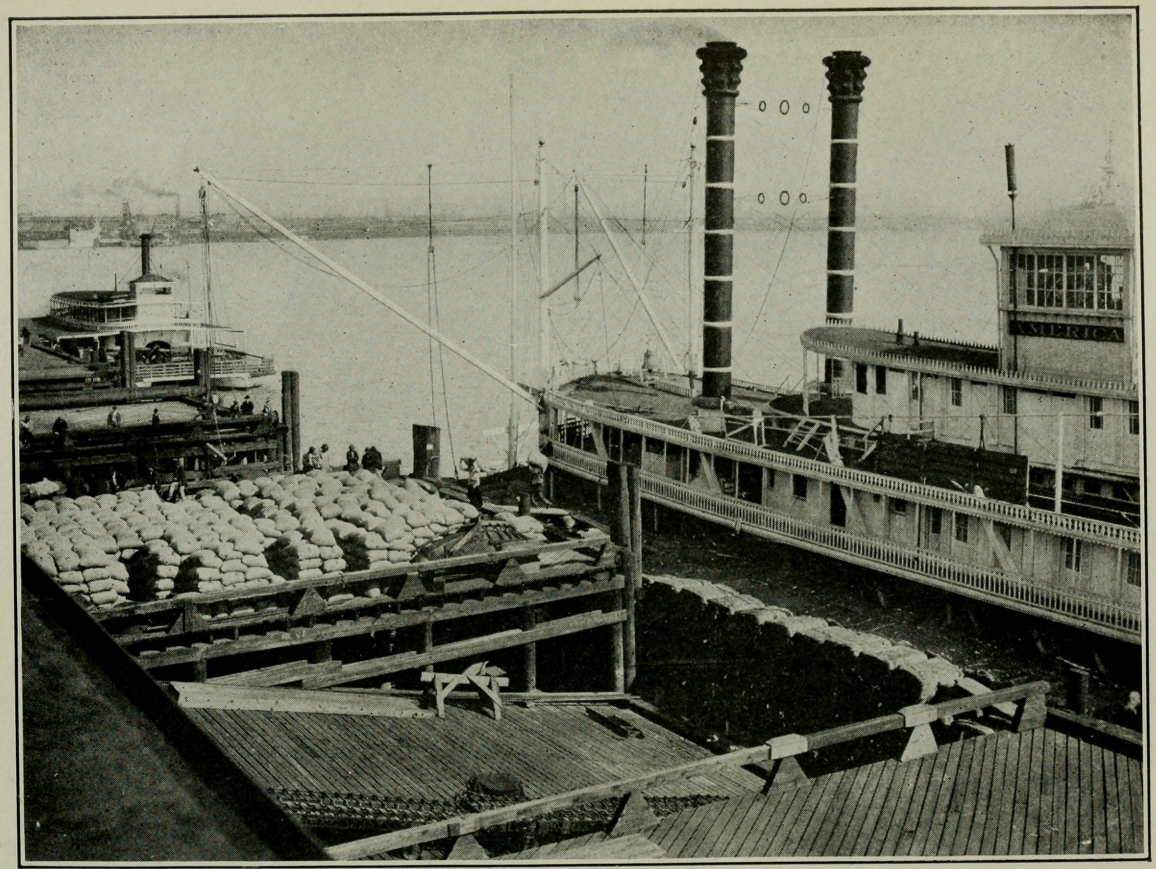


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INTERIOR OF A PLANT FOR REGRINDING COPPER, IN THE COPPER DISTRICT OF MICHIGAN



A VIEW OF MEMPHIS, TENNESSEE, ON THE MISSISSIPPI RIVER



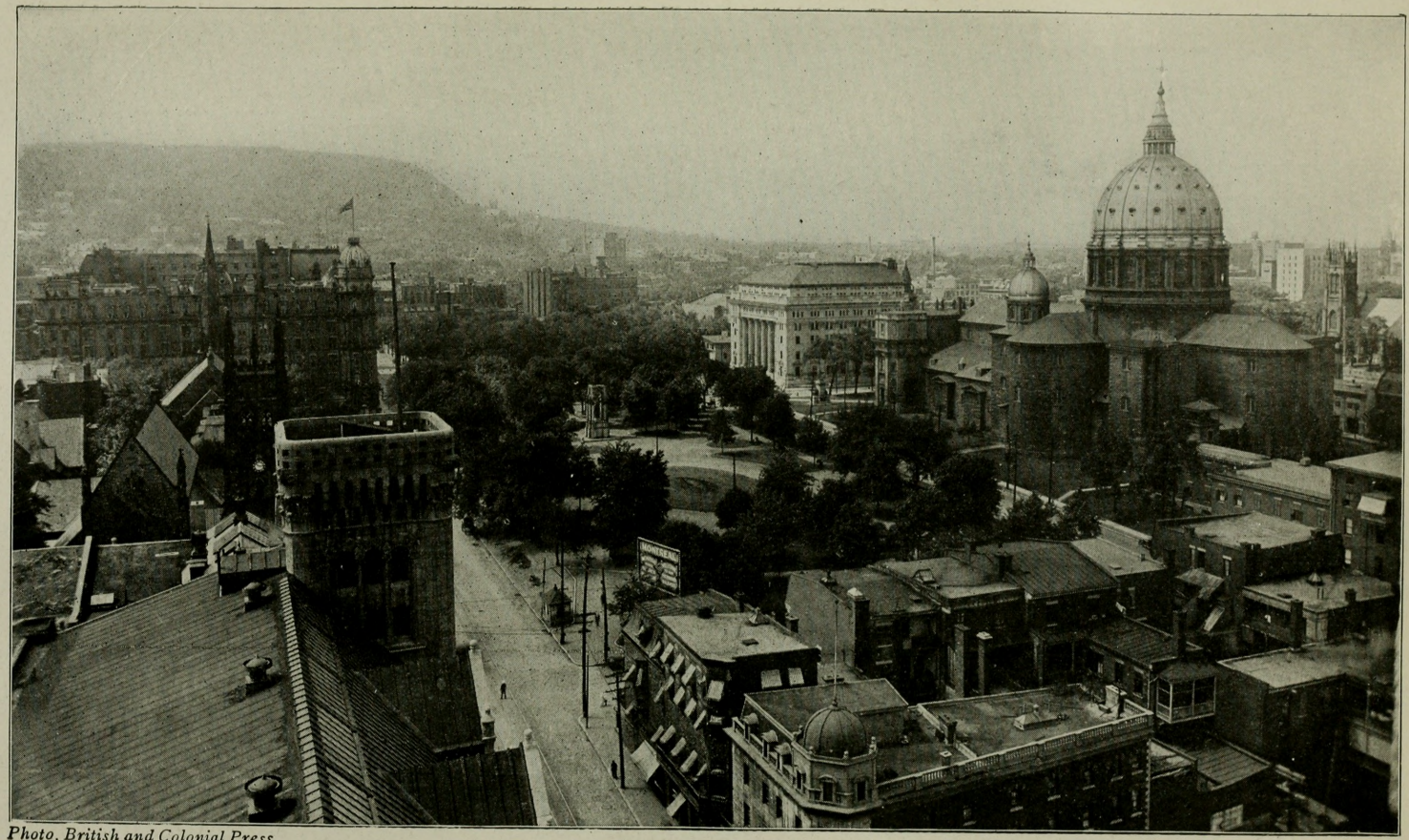
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A MISSISSIPPI RIVER STEAMER AND A DOCK FOR RICE, NEW ORLEANS



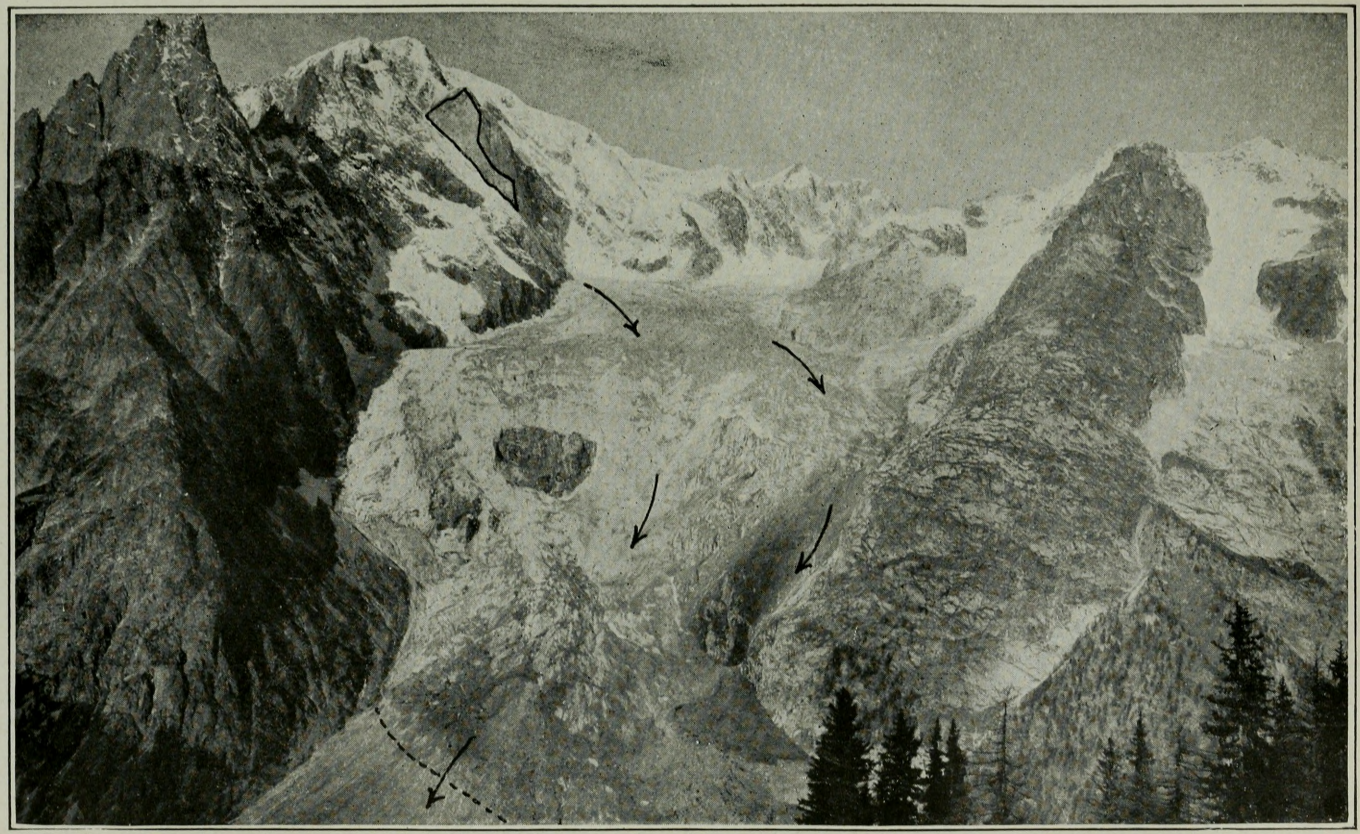
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HIDES FROM ARGENTINA, UNLOADED FROM A JAPANESE STEAMER AT NEW ORLEANS



Photo, British and Colonial Press

MONTREAL, CANADA, SHOWING DOMINION SQUARE AND ST. JAMES'S CATHEDRAL



© *Paul Thompson*

THE ROCK THAT FELL FROM MONT BLANC TO THE BRENVA GLACIER, CAUSING AN AVALANCHE, NOVEMBER, 1920

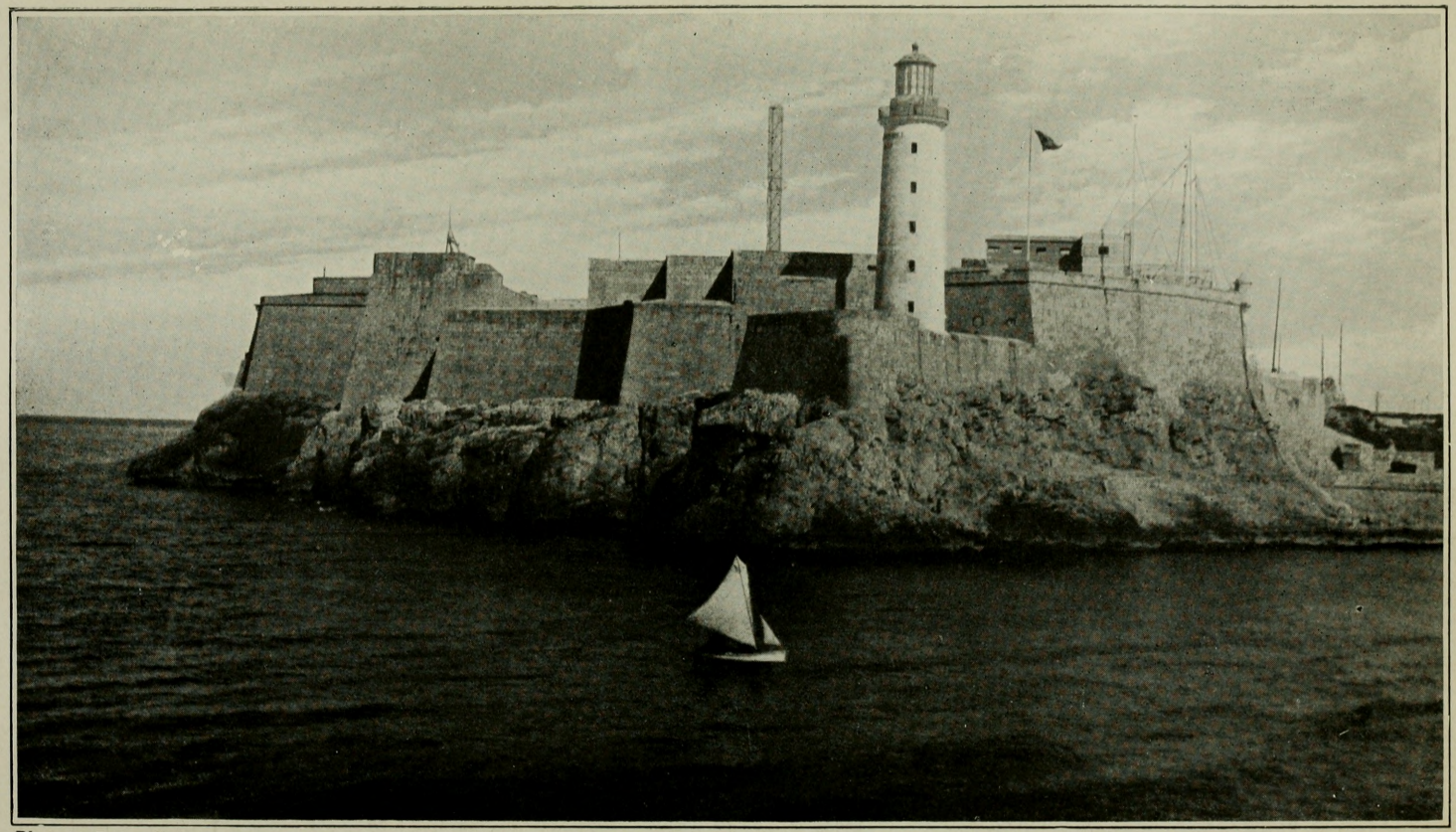


Photo by Ewing Galloway

MORRO CASTLE, THE OLD FORT THAT GUARDS HAVANA HARBOR

souri) should forever be free from slavery. This compromise was virtually repealed in 1854, when territorial governments were established for Kansas and Nebraska.

MISSOURI, UNIVERSITY OF, a coeducational and non-sectarian institution in Columbia, Mo.; founded in 1840; reported at the close of 1919: Professors and instructors, 296; students, 3,536; volumes in the library, 233,820; endowment funds, $1,809,339; grounds and buildings valued at $2,788,855; income, $1,350,000; number of graduates, 2,105; president, A. Ross Hill.

MISSOURI VALLEY COLLEGE, a coeducational institution in Marshall, Mo.; founded in 1889 under the auspices of the Cumberland Presbyterian Church; reported at the close of 1919; Professors and instructors, 14; students, 232; productive funds, $617,642; income, $30,000; number of graduates, 370; president William H. Black, D. D.

MIST, fog; obscurity.

MISTASSINI (-sē'nē) **LAKE,** a sheet of water in Canada, in about lat. 51° N., lon. 72° to 73° W.; length, about 125 miles; average width, 20 miles; it forms the head waters of the Rupert river. First surveyed in 1884.

MISTLETOE, *Viscum album,* a plant parasitic on the apple and other fruit trees, on the thorn, the oak, the poplar, the lime, the ash, etc. It sometimes kills the branch or even the tree on which it is a parasite. Its flowers in threes, inconspicuous, green; its berries globose or ovoid, yellow, viscid. Found in the United States, also in Europe, and the N. of Asia. The United States mistletoe differs from that found in Europe in the fact that it has much broader leaves. BIRD-LIME (*q. v.*) is made from the berries. It was deemed sacred by the Druids, and still finds a large market in the United States and England when preparation is being made for Christmas festivities and sports.

MISTRAL, FRÉDÉRIC (mēs-träl'), a Provençal poet; born a peasant's son, near Maillaune, Bouches-du-Rhône, France, Sept. 8, 1830. He studied law at Avignon, but abandoned it for poetry. In 1859 he published the epic "Mirèio" written in his native Provençal dialect. This charming representation of life in southern France made his name famous and gained for him the poet's prize of the French Academy and the cross of the Legion of Honor. It also led to the formation of the society called Lou Felibrige, to create a modern Provençal literature. In 1867 Mistral published a second epic, "Calendou"; in 1876 a volume of poems, "Lis Iselo d'Or" (Golden Islands); and a novel, "Netro." Died 1914.

MITAU (mē'tou), the capital of Courland, on the right bank of the Aa, 27 miles S. W. of Riga; has a castle, begun by Biron in 1738, and important manufactures, and a trade in grain and timber; founded in 1271 by the grandmaster of the Teutonic Knights. From 1798 to 1807 it offered an asylum to Louis XVIII. Pop. about 40,000.

MITCHAM, suburb of London, England, midway between Croydon and Wimbledon in Surrey, 2 miles S. of the city limits. Has large flower gardens, used largely for the manufacture of perfumes, essences, and medicinal extracts. Country round is largely resorted to for pleasure by Londoners, particularly Mitcham Common, which is extensive playground. Pop. about 30,000.

MITCHEL, JOHN, an Irish patriot; born the son of a Presbyterian minister, in Dungiven, County Derry, Ireland, Nov. 3, 1815. Soon after the formation of the Young Ireland party, and the starting of the "Nation," in 1842, Mitchel began to contribute, and became assistant editor. In 1848 Mitchel started the "United Irishman." For his violent articles he was tried on a charge of treason-felony and sentenced to 14 years' transportation. He was sent to Van Dieman's Land, whence he made his escape to the United States in 1853. Books were: "Life of Hugh O'Neill, Prince of Ulster" (1845); "History of Ireland from the Treaty of Limerick" (1868). In 1874 he returned unmolested to Ireland, and was elected to Parliament for Tipperary, but declared ineligible. Again elected, he died in Cork, Ireland, March 20, 1875.

MITCHEL, JOHN PURROY, mayor of New York, 1914-1918; born in Fordham, N. Y., in 1879. Educated at Fordham and Columbia Colleges. Graduated from N. Y. Law School in 1901 and admitted to bar; became member of law firm, Mitchel & Millan. Appointed special counsel to city of New York in 1906; Commissioner of Accounts, 1907; investigated borough presidents of Manhattan, Brooklyn, and Bronx, mayor's license bureau and other departments, and prosecuted city's case against a number of officials. Elected President of the Board of Aldermen for 1909-1913, and was acting Mayor during 1910. In 1913 was made Collector of Port by President Wilson, and was elected Mayor on Fusion ticket, November, 1913. When World War broke out, came out strongly on side

of the Allies, and approved entry of United States into conflict. Standing for re-election as Mayor in November, 1917, he was defeated by John Hylan. Later entered the aviation forces of the United States, and was killed on July 6, 1918, at the aviation camps at Lake Charles, La., by a fall from an aeroplane. During 1920 various projects have been under consideration to commemorate his name.

MITCHELL, a city and county-seat of Davison co., S. D.; on the Chicago, St. Paul, Minneapolis and Omaha, and the Chicago, Milwaukee and St. Paul railroads; 65 miles W. by N. of Sioux Falls. It is in an agricultural region, and is the seat of Dakota University (M. E.). It has manufactories of well-boring machinery and chemicals, and an assessed property valuation of nearly $1,000,000. Pop. (1910) 6,515; (1920) 8,478.

MITCHELL, DONALD GRANT, pseudonym IK MARVEL, an American author; born in Norwich, Conn., in April, 1822; was graduated at Yale in 1841; traveled in Europe; studied law in New York; and in 1847 published "Fresh Gleanings; or, a New Sheaf from the Old Fields of Continental Europe." In 1850 his most famous book appeared, "The Reveries of a Bachelor," and in 1851 his "Dream Life." In 1853 he became United States consul at Venice. Later publications were: "My Farm of Edgewood" (1863); "Wet Days at Edgewood" (1865); "Seven Stories, with Basement and Attic" (1864); "Doctor Johns" (1866); "English Lands, Letters, and Kings" (1889); "American Lands and Letters" (1897). He died Dec. 15, 1908.

MITCHELL, JOHN, American labor leader; born in Braidwood, Ill., 1870; went to work in the coal mines at an early age; joined the Knights of Labor in 1885. When the United Mine Workers were organized in 1890 he immediately became a member. In 1895 he became secretary-treasurer of the Illinois district of the organization; then national organizer in 1897; national president two years later. It was under his leadership, as president, that the United Mine Workers acquired great influence, power, and a big membership. He directed the strike of the coal workers during 1900-1902. In 1908 he resigned as president of the organization. Was a close personal friend of Theodore Roosevelt. Was head of the Trade Agreement Department of the National Civic Federation for three years; became chairman of the State Industrial Commission of New York in 1915. Mitchell was one of the most prominent of the conservative labor leaders, looking to possible working agreement between capital and labor. Died in 1919.

MITCHELL, JOHN AMES, an American journalist; born in New York City, Jan. 17, 1845; studied at Lawrence Scientific School; studied architecture in Boston, Mass., and at the Ecole des Beaux Arts in Paris, 1867-1870; practiced as an architect in Boston, 1870-1876; afterward engaged in artistic and decorative work; studied drawing and painting in Paris, 1876-1880; was then in New York till 1883 as artist, illustrator, and writer; founded, Jan. 3, 1883, "Life," of which he was editor. Wrote: "The Summer School of Philosophy at Mt. Desert" (1881); "Romance of the Moon" (1886); "The Last American" (1889); "Amos Judd" (1895); "That First Affair" (1896); "Gloria Victis" (1897); etc. Died 1920.

MITCHELL, MARIA, an American astronomer; born in Nantucket, Mass., Aug. 1, 1818. She inherited her father's love of astronomy, which she made her life-work. She discovered a considerable number of nebulæ and a comet (in 1847), for which she received a medal from the King of Denmark. She was librarian of the Nantucket Athenæum for many years, and a computer on the "American Nautical Almanac." Professor of Astronomy and Director of the Observatory of Vassar College, 1865-1888. She took part in several eclipse expeditions with parties of her students. She died in Lynn, Mass., June 28, 1889.

MITCHELL, SILAS WEIR, a distinguished American physician, poet, and novelist; born in Philadelphia, Pa., Feb. 15, 1829; studied at the University of Pennsylvania; was graduated at Jefferson Medical College (1850); practiced in Philadelphia and became prominent as a physiologist, especially as a neurologist and toxicologist; was member of National Academy of Sciences (1865), British Medical Association, etc.; LL.D. (Harv. and Univ. of Edinburgh). He wrote treatises on "Neurology," "Serpent Poisons," "Comparative Physiology." He published several volumes of poems and essays, and among his best novels are: "Hugh Wynne" (1897); "Adventures of François" (1900). Died 1918.

MITE, a name common to numerous small, in some cases microscopic animals, of the class Arachnida (spiders) and division Acarida.

MITER, or **MITRE**, in ordinary language, a form of head-dress worn by the

inhabitants of Asia Minor; a head-band. In the Jewish religion, the divinely-appointed head-dress of the Jewish high priest. In the Christian religion, the head-dress of a bishop. Miters are supposed to have been first worn between the 7th century and the 10th.

MITFORD, MARY RUSSELL, an English writer; born in Alresford, Hampshire, England, Dec. 16, 1787; when 10 years old she drew a lottery prize of $100,000. Her father (a physician), having dissipated several fortunes, she adopted literature. Her most famous works were: "Our Village" (5 vols. 1824-1832); and "Recollections of a Literary Life" (1852-1854). Other works were the tragedies "Julian" (1823), "The Foscari" (1826), and "Rienzi" (1828), all produced by Macready or Charles Kemble; "Belford Regis" (1835), a novel; poems, short stories, juvenile stories, etc. She died in Swallowfield, Jan. 10, 1855.

MITHRIDATES (-dā'tēz), surnamed EUPATOR, and THE GREAT, King of Pontus, and the 16th of the name; born about 131 B. C. He was the son of Mithridates Euergetes, was brought up at Sinope, and displayed in his youth extraordinary daring and tact. He succeeded his father, 120 B. C., and his first acts were the murder of his mother and his brother. He then began his career of conquest by making himself master of Colchis and the Tauric Chersonese. The kingdoms of Bosporus, Cappadocia and Bithynia were successively added to his dominion; took Phrygia and Galatia, almost all Asia Minor, and occupied Thrace and Athens. All hope of reconciliation with Rome was taken away by the massacre of all the Romans found in Asia. After four years of war, Mithridates was compelled to give up his conquest and his fleet, and pay a heavy contribution to the Romans.

Mithridates invaded Bithynia, defeated the Romans at Chalcedon, and besieged Cyzicus. Lucullus soon compelled him to raise the siege, defeated him in Pontus, and drove him into Armenia. Again the tide turned, and Mithridates recovered a large part of his dominions. In 66, Pompey was sent to carry on the war, and defeated him near the Euphrates, so that he had no choice but to retire into the kingdom of Bosporus. His spirit was still unbroken, and he formed the bold plan of invading Italy from the N.; but eventually his son Pharnaces was proclaimed king by the soldiers. He took poison, which proved ineffectual, and was put to death by a faithful slave in his service, 63 B. C.

MITLA (mēt'lä), a ruined city of Mexico, 15 miles S. E. of Oaxaca, with extensive remains of a prehistoric race.

MITO, a city of Cochin-China, on an arm of the Mekong river. It has important trade interest, and has a college and hospital. Pop., about 30,000.

MITOSIS, the phenomena of indirect nuclear division of the cells that are growing, or undergoing the changes in the egg which result in the development of the embryo. The first processes are marked by a rearrangement of the nuclear network into a series of loops on V-shaped bodies. During these changes a minute body in the cytoplasm divides in half, forming two cells at opposite poles, the nucleus between. Each consists of a centrosome with a radiating mass. The chromosomes of the nucleus are arranged with ends opening outward and closed ends near the center, and they divide along the contact plane, half joining and being incorporated with each centrosome. As the cell is contracted between the centrosomes a new nucleus is developed in each of the two portions by a process practically the reverse of that just given. The result is the formation of daughter cells, from the mother cell, each containing half of the chromatin elements of equal weight and quality. Chromatin particles are generally believed to be the carriers of heredity.

MITRAILLEUSE (mē-trā-yuhz'), originally the French term for a weapon designed to fire a number of cartridges in a short time, but now used generally for all machine guns. A Belgian invention, it was first used on a large scale in the Franco-Prussian War of 1870. The weapon consisted of a group of combined rifle barrels with breech-action mechanism. The cartridges in steel blocks, were successively dropped into a breech slot, and replaced on discharge by a fresh plate. See MACHINE GUN.

MITYLENE, or **MYTILENE** (mit-i-lē'ne), an island of the Grecian Archipelago of Asia Minor; between lat. 39° and 39° 20′ N., lon. 25° 50′ and 26° 35′ E.; area, 276 square miles. Products, corn, wine, oil, cotton, pitch, and fruits. Chief towns, Castro, or Mitylene, Molivo, and Culoni. Lesbos is said to have been peopled by the Pelasgians, who were followed by the Ionians and the Æolians. It was made a Roman province about 48 B. C.; and during the Middle Ages received the name of Mitylene from its chief city. Mohammed II. conquered it, and annexed it to the Turkish empire, in 1462. During the War of Independence, the Turkish and Greek squadrons

fought a battle off Mitylene, Oct. 7, 1824, on which occasion the Turks were defeated and their fleet was destroyed. Occupied by Allies in the World War. Pop. about 185,000.

MIZZEN, or **MIZEN**, the aftermost of the fore-and-aft sails of a ship; called also the spanker or spencer. Also the aftermost mast in a three-masted ship, or in those two-masted ships in which the forward mast is the larger, such as the ketch and yawl. The main is always the larger mast. When the larger mast in a two-masted vessel is forward, the one abaft, is the mizzen, when the larger mast is abaft, the one nearer the bows is the fore-mast.

MJÖSEN, a lake in Norway, the largest inland body of water in that country. It is 62 miles in length with an average width of about two miles. Its shores are an attractive summer resort.

MNEMONICS (ne-mon'iks), the art of assisting the memory; a method of recalling to the mind facts, or numbers. All of the various systems that have been proposed are based on the psychological law of association, where a fact, or figure, is recalled by its association, or relation to something else more easily remembered. The familiar rhyme, "30 days hath September," is a simple illustration. Mnemonics have been used by medical students for many years to recall the names of muscles, and the order of cerebral nerves, and students in logic use devices to remember parts of syllogisms. Many of these devices depend on number and letter relations, and others on sound and rhyme relations. The majority of these memory aids are purely mechanical, having some value in certain studies and in salesmanship, and other commercial pursuits.

MNEMOSYNE (nē-mos'i-nē), in Greek mythology, the daughter of Uranus, and mother of the nine muses by Zeus. The principal seat of her worship was at Eleutheræ, in Bœotia.

MOABITES, a pastoral people, who inhabited the bleak and mountainous country E. of the lower part of the Jordan and of the Dead Sea. Their sovereign divinity was Chemosh, and patriotism was an essential part of their religion. They were ethnologically cognate with the Hebrews, and were compelled to become tributary to David, but about 850 B. C. shook off their allegiance to the Jewish kings, and afterward took part with the Chaldeans against the Jews. Their name no longer exists, and the remnants of the people have long been included among the Arabs. The most striking feature about the country in modern times is the immense number of rude stone monuments with which it is covered.

MOABITE STONE, a stone bearing an inscription of 34 lines in Hebrew-Phœnician letters, discovered by the Rev. F. Klein in 1868 among the ruins of Dhibân, the ancient Dibon. The stone was of black basalt, rounded at the top and bottom, 2 feet broad, 3 feet 10 inches high, and 14½ inches in thickness. Now stands in the Louvre at Paris. The inscription was discovered to be a record of Mesha, King of Moab, mentioned in II Kings, iii., referring to his successful revolt against the King of Israel. The characters of the inscription are Phœnician.

MOAT, in fortification, a deep ditch or trench round a fort, etc., generally filled with water. Moated houses are still to be seen in England and the continent, though the moat has lost its original significance.

MOBANGI (mō-bäng'gē), or **UBANGI** (ö-bäng'gē), river and province of Belgian Kongo. The river is the lower course of the Welle, forming part of boundary of Belgian Kongo and French Equatorial Africa. It is navigable for over 400 miles.

MOBERLY, a city in Randolph co., Mo.; on the Wabash and the Missouri, Kansas, and Texas railroads; 130 miles E. of Kansas City. Here are a high school, Loretto Academy, German Parochial school, Wabash Railroad Hospital, public school library, waterworks supplied from wells, and gas and electric lights. It has manufactures of carriages, flour, and tobacco, railroad machine and car shops, and a large trade in farm produce, live-stock, wool, hides, and hard woods. Pop. (1910) 10,923; (1920) 12,808.

MOBILE, a city, port of entry and county-seat of Mobile co., Ala., on the Mobile river near Mobile Bay; 30 miles from the Gulf of Mexico, and on the New Orleans, Mobile and Chicago, the Louisville and Nashville, the Southern, the Mobile and Ohio, and the Alabama, Tennessee and Northern railroads; 140 miles E. of New Orleans. It is built on a sandy plain, rising as it recedes from the river, and within a short distance of high and beautiful hills.

Business Interests.—The city is noted for its many industries. Here are manufactories of shingles, boxes, staves, sashes, blinds, and barrels; large flour mills and tobacco and cigar factories;

clothing, carriage, confectionery, saddlery and harness, and other plants. It also has a large export trade to Mexico, Central and South America. The most important exports include cotton, rice, coal, grain, lumber, cigars, tar, resin, turpentine, and vegetables. There are National and State banks and many daily, weekly, and monthly periodicals. In recent years the docking facilities have been greatly increased by the construction of a great system of docks. The bay has also been dredged and straightened.

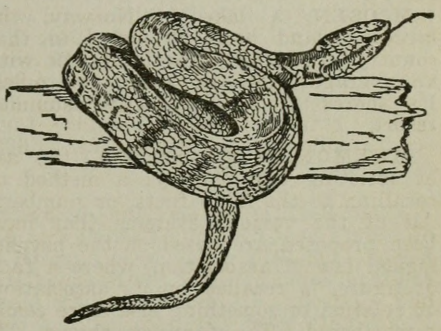
Public Interests.—The corporate limits of Mobile extend 6 miles N. and S. and 2 or 3 miles W. from the river. Its streets are generally well paved, shaded, and quite regular. The water supply, which is by two systems, is so pure that it is employed for chemical purposes without filtering. Here are the United States Government Building, which cost $250,000, the court house, United States Marine Hospital, city hospital, Providence Infirmary, Odd Fellows' and Temperance Halls, the Battle House, the Cathedral of the Immaculate Conception, etc. The educational institutions include the College of St. Joseph, Spring Hill College, McGill Institute, Barton Academy, Evangelical Lutheran Institute, Convent and Academy of the Visitation, Medical College of Alabama, St. Mary's School, and a public library.

History.—In 1702 a fort was built about 20 miles N. of the present site of Mobile by Le Moyne de Bienville and named St. Louis de la Mobile. In 1711 this settlement was nearly annihilated by a furious hurricane, and a disastrous deluge, which compelled its removal to the present location of Mobile. The colony was ceded to Great Britain in 1763 by the treaty of Paris, but with all the English possessions on the Gulf of Mexico was transferred to Spain in 1783. The Spanish government administered its affairs till 1813, when it was taken by an American army under General Wilkinson. It received its charter as a city in 1819. Mobile was under Confederate rule from Jan. 11, 1861, to April 11, 1864. The fleet of Admiral Farragut sailed up Mobile Bay on Aug. 5, of the latter year, and a great battle with the Confederate vessels and forts was fought. This resulted in the destruction of the Confederate fleet, and the capture of Forts Morgan and Gaines. In the spring of 1865 the city was carried by assault, and the city passed into Union hands. The name of Mobile was changed to Port of Mobile in 1879, but the place was reincorporated with full city rights in 1887. Pop. (1910) 51,521; (1920) 60,777.

MOBILE (mō-bēl'), a river of the United States, in Alabama, formed by the union of the Alabama and the Tombigbee, which unite about 45 miles above the town of Mobile. It enters Mobile Bay by two mouths.

MOBILIZATION, in military language, the act of mobilizing; the state of being mobilized; the calling of troops into active service; the placing of an army on a war footing or readiness for active service.

MOCCASIN SNAKE, *Cenchris piscivorus*, of the family *Crotalidæ*, sometimes called the water viper, from its frequenting marshy places. It is a fish-



MOCCASIN SNAKE

eating snake. Habitat, North Carolina, the country to the S. and across to the Rocky Mountains. Also the name is sometimes applied to the copperhead snake. Both these reptiles are extremely poisonous.

MOCHA (mō'*hä*), a seaport, and once the capital of Yemen, in Arabia; on the Red Sea, 130 miles W. N. W. of Aden. From early in the 16th century till the middle of the 17th Mocha was the port from which the coffee of Yemen was principally exported; hence called Mocha coffee. It is now an unimportant place.

MOCKING BIRD, the popular name of *Minus polyglottus*. Ashy brown above, white beneath; wings black, varied with white, tail black. Its range in this country, of which it is native, is from 40° N. to Mexico. It is also said to occur in Cuba. Its vocal powers, imitative and in natural song, exceed those of any other species.

MOCK ORANGE, a name applied in England to the syringa, and in the United States to the *Prunus caroliniana*, a small evergreen resembling the cherry-laurel.

MODENA (mō'de-nä) (ancient Mutina), capital of the former duchy of Mo-

dena; on a broad plain in northern Italy, 23 miles N. W. of Bologna. The cathedral of St. Geminianus, a Romanesque building, has a fine façade; its campanile is one of the great towers of Italy. The ducal (now royal) palace, a picturesque structure of the 17th century, has an infinity of galleries, courts, and marble arches, and contains the Este library of 90,000 volumes, and the gallery of pictures, including works by Guido, and Carracci, Guercino, Correggio. Modena possesses besides a university (1678). The family of Este became its masters in 1288; and in 1452 the reigning marquis was created duke by the Emperor Frederick III. During the first half of the 19th century its dukes pursued a reactive policy against liberalism, and were expelled from their dominion in 1860. The duchy was then incorporated in the kingdom of Italy, and afterward divided into the provinces of Modena, Reggio, and Massa-Carrara. Area of province, 1,002 square miles; pop. city about 77,000; duchy about 325,000.

MODERNISM, a doctrine or system of beliefs held by many Catholics in the period 1888-1910 which were opposed to the traditional belief of the Roman Catholic Church. In common with many Protestants some Catholics believed that the doctrines of the Church should be interpreted in the light of modern scientific facts, especially in the light of the results established by historical science as to the composition of the Bible and the evolution of dogma. Those holding such advanced views were called Modernists, after their desire to "modernize" the beliefs of the Church. The most conspicuous leader of the group was Father George Tyrrell.

Modernism met the most determined opposition in the head of the Church. In 1907 the Pope condemned as heretical, false, and offensive nearly all the propositions advanced by the Modernists. In September, 1907, Pope Pius X. issued his encyclical against the doctrine. As is customary, the letter is known historically by the first words; these were in this case "Pascendi Dominici Gregis." The decree calls Modernism the synthesis of all heresies, and ascribes its spread to folly, ignorance, and curiosity. The Pope declares the doctrine is false in its interpretation of the sacraments and at variance with the scholastic philosophy. The head of the Church urges zeal upon the bishops and especially all the heads of educational institutions under the Church to punish all convicted of holding Modernist doctrines. In 1910 Pius X. went still further and by decree ordered all the priests of all orders in the Church, all professors, and all candidates for holy orders to take a solemn oath repudiating Modernist views and declaring their adherence to the authoritative doctrines of the Church. They are, in addition, to state their unbelief in any doctrine at any time condemned by the Church of Rome. These vigorous edicts, followed up as they were by the action of the authorities, effectually stamped out Modernism.

MODESTO, a city of California, the county-seat of Stanislaus co. It is on the Tuolumne river and the Southern Pacific railroad. The city has an extensive trade in grain, fruit, wool, livestock, dairy products, etc., and is the center of a productive agricultural region which has been developed by irrigation. The notable buildings include a court house, a public library, and a county hospital. Pop. (1910) 4,034; (1920) 9,241.

MODICA (mod'ē-kä), an inland town of Sicily, 45 miles S. W. of Syracuse, with trade in fruit, oil, wine, and grain. Pop. of commune, about 56,000.

MODJESKA, HELENA (mod-jes'kä), a Polish actress; born in Cracow, Poland, Oct. 12, 1844. She began to act in a traveling company in 1861. Four years later she made a great name at Cracow, and from 1868 to 1876 was the first actress of Warsaw. In 1877 she triumphed as Adrienne Lecouvreur at San Francisco and rose to the first rank as an emotional actress. She was especially famous as Camille, Rosalind, and Beatrice. She died April 8, 1909.

MODOCS, an Indian tribe of northern California, which in 1872, after firing on the United States forces, retreated to the neighboring lava beds, and there defended themselves desperately till June, 1873, killing or wounding 132 of the troops. Their chief, Captain Jack, and three others were hanged. About 200 are domiciled on the Klemath Reservation, Oregon.

MOELLER, HENRY, ecclesiastic; born in Cincinnati, O., in 1849; graduated from St. Xavier's College, Cincinnati, in 1869; became student in Rome, attaining degree of D. D. in 1876. Was then attached to St. Patrick's, Bellefontaine, for a year, and was for two years professor at Mount St. Mary's. Appointed chancellor of the archdiocese of Cincinnati, continuing till 1900, becoming coadjutor-archbishop, with title see of Areopolis, in 1903. Became archbishop of Cincinnati in 1904, receiving pallium

in 1905. During period up to 1920 has greatly developed diocese.

MÖEN (muh'en), a Danish island in the Baltic Sea, at the S. E. end of Zealand. It is 20 miles in length. Pop. about 2,300.

MŒRIS (mē'ris) **LAKE**, the ancient Greek name of a sheet of water in Egypt, now in the province of Fayum, about 50 miles S. W. of Cairo; extreme length from N. E. to S. W., 35 miles.

MOERO (mwā'rō), or **MERU** (mā'rō) **LAKE**, a body of water lying S. W. of Tanganyika in Belgian Kongo. Discovered by Livingstone in 1868. Rhodesia was founded on its eastern shore in 1892.

MŒSIA (mē'shiä), an ancient Roman province, divided by the river Cibrus (Zibritza) into two parts, the E. corresponding to the present Bulgaria, and the W. (Mœsia Superior) to Servia. Its original inhabitants were mostly of Thracian race. From the 5th to the 7th century western Mœsia was colonized by the Slav races which still occupy it, and eastern Mœsia by the Bulgarians.

MOGADOR (mog-a-dōr'), or **SUEIRA** (swā'rä), a seaport in the French zone of Morocco. It is the best built town in the empire, having been laid out in 1760 by a French engineer. The exports include almonds, olive oil, wool, goat-skins, hair. The manufactures are brass trays, daggers, furniture of arar wood, woolen cloth, etc. Pop. about 20,000.

MOHÁCS (mō'häch), a town and important river-port of Hungary, province of Baranya, on the Danube river. On Aug. 29, 1526, the Turks, under Solyman the Magnificent, completely defeated the Hungarians, who lost 22,000 men. Pop. about 18,000.

MOHAIR, the hair of the Angora goat. Also a fabric made from the fine white, silky hair of the Angora goat and allied species; sometimes called camlet. The hair is said to be produced in perfect quality in no place excepting Angora in Asia Minor, and has long been a valuable article of export from that place. Also a wool and cotton fabric made in imitation of the above, in mixed colors or plain.

MOHAMMED (mō-ham'ed), or **MAHOMET** (ma-hom'et), the Arabian prophet, and the founder of Islam; born in Mecca, Arabia, A. D. 570 or 571. He was the only son of Abdallah and Amina, being of the family of Hashem, the most illustrious in the noble tribe of Koreish, princes of Mecca, and guardians of the Caaba. Left an orphan in infancy, he was brought up by his uncle, Abu Taleb, who trained him to commerce. The theory of his high cultivation is now exploded. When 25 years of age Mohammed married Khadija, a rich and noble widow of Mecca, and the following 15 years of his life were passed in domestic quietness. From his youth the future prophet had shown a fondness for seclusion and serious meditation. He began, at 40 years of age, to announce himself as an apostle, and to proclaim the doctrine of Islam (salvation), that "There is no God but Allah, and Mohammed is his Prophet." After three years, he made a more public announcement of his doctrine, especially insisting on the unity of God, and denouncing all kinds of idolatry; but his followers were very few for years, the opposition of the elders and people of Mecca growing more and more bitter. In A. D. 621, Mohammed lost his faithful and beloved Khadija, and soon after, the Koreishites, headed by Abu Sophian, resolved to put the prophet to death. He fled from Mecca, and with his only companion, Abu-bekr, withdrew to Medina (then called Yatreb). He made a public entry into Yatreb and at once assumed the offices of king and priest. He also there married his second wife, the beautiful Ayesha, daughter of Abu-bekr, who long survived him. He had, however, many other wives. Persuasion, long tried with little success, at length gave place to force and war, and in the battle of Beder he defeated Abu Sophian and the Koreish (A. D. 623). He was defeated by them in A. D. 625; they unsuccessfully besieged Medina, and a truce for 10 years was agreed on. Wars with Jewish tribes followed; many Arabian tribes submitted themselves; and in 630 the conquering prophet marched to Mecca, received the keys of the city, and was acknowledged as prince and prophet. He destroyed its 360 idols, and decreed that no infidel should enter the holy city. The whole of Arabia was soon after conquered. War with the Roman empire was begun; an expedition for the conquest of Syria was prepared; when Mohammed, believed to be immortal by some of his disciples, fell into a fever and died in Medina, Arabia, June 7, 632. See KORAN: MOHAMMEDANISM.

MOHAMMEDANISM, MAHOMETANISM, or MUHAMMADANISM, the religion founded by MOHAMMED (*q. v.*), During the Caliphates of his immediate successors Abu-bekr (632-634) and Omar (634-646), the Arabs, or Saracens, conquered Syria. Persia, and Egypt, and

established the new faith. Othman resigned next (644-655). Then the Arabs elected Ali, Mohammed's son-in-law. Ali was assassinated in 661, Hassan and Hosein, his sons, soon after perishing In 710 Tarik landed in Spain, the straits where he had passed and the adjacent rock being ever afterward called GIBRALTAR (*q. v.*). In 732 Charles Marte (=the Hammer) defeated the Arab Abderrahman at Poitiers, saving western Europe. The Saracen capitals had been successively at Medina, at Cafa, at Damascus, and at Bagdad. About the middle of the 8th century, the Saracen empire in the East began to be broken down by the Turks, then a savage Tartar tribe, who afterward embraced Mohammedanism, and in 1453 took Constantinople, terminating the Greek or Eastern empire. Since the 16th century their power has been less dreaded. Their faith is called Islam (=surrender of the will to God). Five duties are incumbent on the faithful Mohammedan: A confession of faith that there is but one God, and that Mohammed is his prophet, prayer, fasting, almsgiving, and a pilgrimage to Mecca. Friday is their Sabbath and day of special worship. In Turkey, Syria, Palestine, Arabia, Persia, Asia Minor, Afghanistan, Baluchistan, Turkestan, India, and Malay Peninsula it is estimated that 57,000,000 adhere to the faith. In China 25,000,000, and throughout the world 175,000,000. There are a few scattered followers in the United States.

MOHAMMED I., Emperor of the Turks, succeeded his brother Mousa in 1413; he re-established the glory of the Ottoman empire, and fixed the seat of government at Adrianople, where he died in 1421.

MOHAMMED II., born in 1430, succeeded to the throne in 1451; he was the first who received the title of Grand Seignior. He died after a long and victorious career A. D. 1481.

MOHAMMED III., succeeded his father Amurath III. in 1595. He entered Hungary, and gained a victory over the Archduke Maximilian. He finally had to sue for peace to the Christian princes whose States he had ravaged. He died in 1603.

MOHAMMED IV., born in 1642, became emperor in 1648. In 1672, the Sultan marched against Poland; but he made peace on condition of an annual tribute being paid. John Sobieski, irritated at this ignominious treaty, raised an army, and defeated the Turks near Choczim, on which a new treaty, favorable to Poland, was signed in 1676. In 1683 the Turks laid siege to Vienna, on which Sobieski marched to its relief, and routed the besiegers. The Janissaries deposed Mohammed IV. and sent him to prison, where he died in 1691.

MOHAMMED V., Sultan of Turkey; born 1844; died July 3, 1918. He was the son of Sultan Abdul Medjid and a direct descendant of the House of Othman. He succeeded his brother, the notorious Abdul Hamid, when the latter was deposed by the Young Turk Revolution, 1909. During his early manhood, until he ascended the throne, he was virtually a prisoner and remained intellectually starved. On coming into power, he had neither the knowledge nor the initiative to shape a policy of his own, and so fell under the influence of the body of advisers who surrounded him. He remained a mere puppet and had no share in the responsibility for enlisting Turkey on the side of Germany in the war. He was succeeded by his brother, Mohammed VI.

MOHAMMED VI., Sultan of Turkey; he was born in Constantinople in 1861. Son of Abdul Medjid. He succeeded his brother, Mohammed V., on the latter's death, on July 3, 1918.

MOHAMMERAH (mō-häm'me-rä) (Muhammrah), a town of Khuzistan, Persia, near the Turkish frontier. It stands on the lower Karun, where the latter connects by the Haffar canal with the Shat-el-Arab. Pop. 15,000.

MOHAVE (mō-hä'vā) **DESERT**, a basin, with little water or vegetation, chiefly S. E. of California, and extending into Arizona. The Mohave river rises in the San Bernardino range, and finally disappears in the Mohave Sink.

MOHAWK, a river in New York, the principal tributary of the Hudson; length about 135 miles.

MOHAWKS, a tribe of North American Indians, belonging to the confederacy of the Five (afterward Six) Nations (see IROQUOIS). They originally inhabited the valley of the Mohawk river. About 1,200 are domiciled on Grand river and Bay of Quinte, eastern end of Lake Ontario.

MOHEGAN, or **MONHEGAN INDIANS** (-hē'gan), a tribe of the Algonquin family who formerly lived on the Thames river in Connecticut. They were at one time united with the Pequots and after the death of Sassacus, the Pequot leader, the remainder of the tribe came under the Mohegan chief. After the death of King Philip in 1676, the Mohe-

gan tribe was the only important one in that region. They became scattered, some joining the Brotherton Indians in New York. Only about 100 remain, of mixed white and negro blood, residing near Mohegan, or Norwich, Conn.

MOHILEFF, or **MOGILEFF** (mō-gē-lef'), the capital of a province in European Russia; on the Dnieper, 95 miles S. W. of Smolensk. It is the seat of a Greek and a Roman Catholic archbishop, their respective cathedrals dating from 1780 and 1692, and has an old castle, and a town house built in 1679. Tanning is the principal industry; there is also an active trade in cereals, leather, brandy, salt, sugar, fish, timber, etc. The town was burned down by Peter the Great for strategical reasons in 1708. Here July 23, 1812, the French under Davoût defeated the Russians under Bagration. Pop. about 75,000. Area of province 18,514 square miles; pop. 2,551,400. Another Mohileff is in Poland, government of Podolia, on the Dneister river. Pop. about 35,000.

MOHONK LAKE, a town in Ulster co., N. Y., 14 miles N. W. of Poughkeepsie. It is situated on the N. end of Lake Mohonk at an elevation of about 1,200 feet. Mohonk Lake is notable for the conferences known as the Lake Mohonk Conference held annually for the consideration of economic and social subjects. It was founded by Albert Keith Smiley, who in 1870 erected a large hotel. The entire tract includes about 5,500 acres.

MOIDORE (moi'-), a Portuguese gold coin used in 1690-1722. Value about $6.50.

MOIRÉ (mwä-rā'), silks figured by the peculiar process called "watering." The finest kinds of watered silks are known as moirés antiques. The same process has been applied to woolen fabrics called moreen, which is only an alteration of the word moiré.

MOISSAN, HENRI, French chemist; born in 1852. After preparatory education at Paris, where he was born, became a student at Museum of Natural History, joining when 27 staff of School of Pharmacy, teaching in toxicology and mineral chemistry departments. In 1900 he became professor at the University of Paris, and in 1906 received the Nobel prize for chemistry. Was awarded the Lacaze prize in 1887 for discoveries in fluorine, and later attracted attention by the claim that he had discovered how to manufacture diamonds. He wrote extensively for magazines and encyclopedias, his other works including: "L'Isolement du fluor" (1886); "Reproduction du diamant" (1893); "Carbure de calcium" (1894); "Etude complète des carbones amorphes et des graphites" (1898); "Classification des éléments" (1904); "Traité de chimie minérale" (1905). Died in 1907.

MOJI, a city of Japan on the island of Kiushiu. In recent years it has grown in importance industrially. There are important coal deposits in the surrounding country. Pop. about 75,000.

MOKANNA (mō-kän'nä) (surname of **HAKIM BEN ALLAH**) ("THE VEILED"), the founder of a sect in Khorasan, who first appeared in the 8th century, during the reign of Almahdi, the third Abasside calif. He commenced his career as a soldier. In a fight an arrow pierced one of his eyes, and in order to hide this deformity he henceforth constantly wore a veil. Mokanna set himself up as an incarnation of God. Mokanna found many adherents, and he was able to seize on several fortified places. But Almahdi marched against him, and after a long siege took his stronghold of Kash (720 A. D.), when together with the remnant of his army the veiled one took poison.

MOLASSES, the brown uncrystallizable syrup obtained in the refining of sugar.

MOLAY, JACQUES DE (mo-lā'), the last grand-master of the Knights Templars; born in Burgundy. Phillipe le Bel, King of France, and Pope Clement V., formed a plan for the extermination of the Templars, who were accused of heresy, impiety, and various crimes. In October, 1307, all the Templars throughout France were arrested at the same hour, and they were tried and convicted. Fifty-seven were committed to the flames in 1311; and after an imprisonment of seven years, De Molay shared their fate at Paris, March 18, 1314. Many commanderies of the modern Knights Templar in the United States are named after him.

MOLD, or **MOULD**, in botany, the name given to any thread-like fungal, whether belonging to the Hyphomycetes or the Physomycetes, which are found on bread, ink, gum, etc. Brown, blue, or green mold is *Penicillium glaucum;* another green mold is *Mucor mucedo.*

In geology: Vegetable soil consisting of the surface stratum, whether of clay, gravel, sand, or rock, disintegrated by atmospheric influences and modified by the plants, first of lower and then of higher organization, and by the animals which reside upon or pass over its surface.

In anatomy: A fontanel or space occupied by a cartilaginous membrane situated at the angles of the bones which form the skull in a human fœtus and a new-born child.

In building: A frame to give shape to a structure, as in the building of houses in concrete, béton, clay, cement, etc.

In founding: Molds for casting are of several kinds: (1) Open molds into which the metal is poured, the upper surface of the fluid metal assuming the horizontal position. Such are ingots and some other objects. (2) Close molds of metal or plaster of Paris, with ingates by which the molten metal enters. Such are the molds for inkstands, cannon balls, bullets, type, and various other articles made of lead, tin, zinc, and their alloys, which fuse at a moderate heat. (3) Close molds of sand, in which articles of iron, brass, bronze, etc., are cast.

In gold-beating: The package of gold-beater's skin in which gold leaf is placed for the third beating.

In paper making: Hand-made paper is made by a mold and deckle. The mold is an open, square frame with a wire cloth bottom, and a little larger all round than the required sheet of paper.

In plastering: A thin board cut to a pattern and used in forming cornices, etc.

In shipbuilding: A full-sized pattern of the same figure and dimensions as the molding side of the piece which it represents.

MOLDAU (mol'dou) (Bohemian, Vltava), the chief river of Bohemia, and an important tributary of the Elbe, rising in the Böhmerwald mountains, on the S. W. frontier, at an elevation of 3,870 feet above sea-level, and flowing S. E. to Hohenfurt where it bends N., and pursues that direction to its confluence with the Elbe opposite Melnik, after a course of 278 miles.

MOLDAVIA, formerly an independent state, but since Dec. 23, 1861, joined with Wallachia, the two forming the modern state of Rumania, of which it forms the northern part. It is 14,759 square miles in area and has a population of about 2,145,000.

MOLDING, or **MOULDING**, in architecture, a term applied to all the varieties of outline or contour given to the angles of the various subordinate parts and features of buildings, whether projections or cavities, such as cornices, capitals, bases, door or window jambs and heads, etc. There are eight sorts of regular moldings; viz. the ovolo, the talon, the cyma, the cavetto, the torus, the astragal, the scotia, and the fillet. The ovolo and talon, from their peculiar form, seem intended to support other important moldings or members; the cyma and cavetto, being of weaker contour, should only be used for the cover or shelter of other parts; the torus and astragal, bearing a resemblance to a rope, appear calculated to bind and fortify the parts to which they are applied; the use of the fillet and scotia is to separate one molding from another, and to give a variety to the general profile.

In joinery: A mode of ornamentation by grooved or swelling bands, or forms following the line of the object. In mining, the ore found on the top of veins near the surface of the ground. In shipbuilding, giving the correct outline and depth to ship's timbers, etc.; it is one part of the operation of forming.

MOLE, in zoölogy, the genus *Talpa*, and specially *T. europæa*, the common mole, about six inches in length (including the tail, rather more than an inch); the body is cylindrical, muzzle long and pointed, eyes minute; no ear conches; the fore-feet broad and fossorial, hind-feet long and narrow. Fur, black, soft and velvety with grayish tinge. The normal food of the mole is the earthworm. Geographical range, from England to Japan. Moles, the family *Talpidæ*. In husbandry, a cylindrical plug of iron three or four inches in diameter, and with a sharp point, drawn or driven through the subsoil to make a drain.

MOLECH (mo'lek), or **MOLOCH** (mo'lok), a heathen deity chiefly mentioned in the Old Testament as the national god of the Ammonites, to whom children were sacrificed by fire.

MOLE CRICKET, in entomology, any individual of the genus *Gryllotalpa*. It is about an inch and a half long, dark brown in color. In the forelegs there is a strong analogy with the moles. Lands infested by the mole cricket are recognizable by the vegetation, which is yellow and withered, from the roots being eaten off by the insect in its burrowing operations—not for food, as its diet is chiefly underground insects and worms. It flies occasionally in the evening, and produces a note somewhat like that of the goatsucker.

MOLECULE, the smallest quantity of any elementary substance or compound which is capable of existing in a separate form. Cohesion and chemical affinity are instances of molecular attraction. See CHEMISTRY.

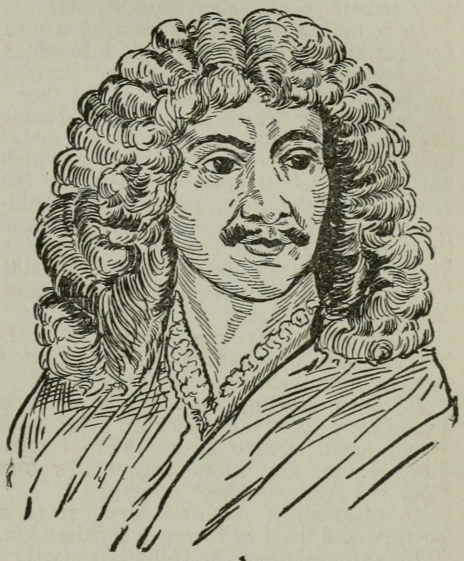
MOLESKIN, a strong twilled cotton fabric (fustian), cropped or shorn be-

fore dyeing; much used for workmen's clothing. So called from its being soft, like the skin of a mole. In the United States the word is also applied to the padded breeches made of moleskin which are worn by football players. The name has also been used to describe a kind of broadcloth.

MOLESWORTH, MRS. (MARY LOUISA STEWART), an English writer; born of Scotch parentage in 1842 in Holland. Her first attempts were published when she was only sixteen. Her first complete works were written under the pseudonym of "Ennis Graham," when she was about 24. They were the novels: "Lover and Husband"; "She was Young and He was Old"; "Not Without Thorns"; "Cicely"; and several years later "Hathercourt Rectory"; and "Miss Bouverie." When she was about 30 she began to write for children and was at once successful. Her children's stories included: "Tell Me a Story" (1875); "Carrots" (1876); "Tapestry Room" (1879); "Her Baby" (1881); "Rectory Children" (1890); "The Green Casket" (1890); "Children of the Castle" (1890); "The Magic Nuts" (1898); "The Grim House" (1899); "This and That."

MOLFETTA, a city of Italy in the province of Bari delle Puglie. It has many important ancient and modern buildings, a library, a museum, and a theater. Its excellent harbor makes it an important commercial center. Pop. about 45,000.

MOLIÈRE (mo-lyār), the professional name of **JEAN BAPTISTE POQUELIN** (pok-la*ng*), a French dramatist; born in Paris, France, Jan. 15, 1622. He took the name of Molière, out of regard to his parents, when he first became an actor. He was brought up to his father's trade, that of upholsterer; but when 14 years of age he was sent to study at the college of Clermont, where he remained several years. He studied law at Orleans, and was received advocate at Paris, and in 1646 he began acting there with a company of amateurs. After obtaining great success in the provinces, he settled at Paris in 1658, having previously produced his two comedies, "The Madcap" and "The Loving Spite." In the following year he increased his reputation by the comedy "The Absurd Précieuses," which had a run of about 120 nights. He excited the animosity of the medical profession, by several sharp attacks on them in his comedies; and that of the priestly and priest-ridden classes, by his terrible attack on pious hypocrites in the famous "Tartuffe," which was withdrawn from the stage by order of the king. The order was annulled in 1668. Among the most admired plays of Molière are: "School for Women"; "Tartuffe"; "The Misanthrope"; "The Wise Women"; "Physician in Spite of Himself"; and "The Imaginary Invalid." His works, it



MOLIÈRE

is said, have been more frequently republished than those of any other French author. In 1673 he took part in the presentation of his last comedy, "The Imaginary Invalid," being at the time seriously out of health; the effort was too much for him, and he died the same night, Feb. 17.

MOLINE, a city in Rock Island co., Ill., on the Mississippi river, and on the Burlington route, the Chicago, Milwaukee, and St. Paul, and the Chicago, Rock Island and Pacific railroads; 178 miles W. of Chicago. It contains electric light and gas plants, electric railroads, public library, high school, and National banks; and has manufactories of organs, elevator machinery, plows, wagons, steam engines, carriages, pumps, malleable iron, stoves, paper, screws, castings, etc. In the vicinity of Moline are highly productive coal mines. Pop. (1910) 24,119; (1920) 30,734.

MOLLAH (mol'ä), or **MULLAH**, meaning "Sir" or "Lord" in Turkey and other Mohammedan countries, a title given to those holding certain judicial rank. There are three classes of Mollahs in Turkey. The 1st have jurisdiction over Pashaliks. The 2d and 3d

class hold office only for a month. All must be versed in ecclesiastical and civil law. The British government in India has suffered heavy losses of life and treasure from revolts led by "Mad Mollahs," notably in the Sudan in 1901.

MOLLUSCA (-lus'cä), in zoölogy according to Linnæus, an order of Vermes, distinct from Testacea, which immediately follows it. Cuvier made the Mollusca one of the four great "divisions" or sub-kingdoms of the Animal Kingdom, of equal rank with the Vertebrata, the Articulata, and the Radiata. He subdivides it into six classes: Cephalopoda, Pteropoda, Gasteropoda, Acephala, Brachiopoda, and Cirrhopoda. Except that the last class has now been merged in Crustacea, and placed with the Articulata or Annulosa, the essential features of Cuvier's arrangement have still been preserved. Dr. Henry Woodward defines the Mollusca as animals with a soft body, without segments, naked or covered with a shell of one or two valves composed of carbonate of lime secreted by a fold of the skin—the mantle. They have a brain-mass, and foot and mantle ganglia. Some have an internal hard shell or cartilage. The symmetry of the body is bilateral. Example, the cuttle-fish, the snail, the oyster, etc. He makes Tunicata and the Molluscoida an "intermediate group," and divides the sub-kingdom into four classes: Cephalopoda, Gasteropoda, Pteropoda, and Conchifera. Many thousand recent Mollusca are known, distributed throughout every climate and nearly every part of the world.

The shells of the Mollusca being all but indestructible, and easy of identification, afford us a reliable means for ascertaining the relative age of strata. As some, moreover, inhabit fresh waters, others the land, besides the large numbers which find their home in salt water, they often settle the fresh-water or marine origin of a stratum. The marine ones being distributed also in certain zones of salt water, they frequently afford materials for sounding a sea which has passed away ages ago. Next to the Protozoa, the oldest fossils known are Mollusca. See BIVALVES.

MOLLWITZ (mol'vits), a village of Prussian Silesia. An obelisk (1878) marks the battlefield where Frederick the Great with 20,000 Prussians defeated an equal number of Austrians under Marshal Neipperg, April 10, 1741.

MOLLY MAGUIRES, a secret society formed in Ireland, in 1843, to intimidate bailiffs or process-servers distraining for rent, or others impounding the cattle of those who were unable or unwilling to pay rent. An association bearing the same name was formed in 1877 in the mining districts of Pennsylvania, which for a time terrorized the coal fields. After some of the leaders had been arrested, tried, and executed the association ceased to be.

MOLOGA (mō-lō'gä), a town in the Russian province of Jaroslav, near the confluence of the Mologa and Volga, 68 miles W. N. W. of Jaroslav. The river Mologa winds 337 miles S. E. through the provinces of Tver, Novgorod, and Jaroslav, and is one of the links between the Volga and the Neva.

MOLOKAI (mō-lō-kī'), an island of the Hawaiian group, about 40 miles long by from 7 to 9 broad. All lepers of the islands are sent here and kept isolated from the healthy part of the community. Pop. about 1,800.

MOLTKE, HELMUTH KARL BERNHARD, COUNT VON (molt'ke), a Prussian military officer, one of the greatest soldiers of Europe; born in Parchim, Mecklenburg-Schwerin, Oct. 26, 1800. He was the son of a German army



COUNT HELMUTH KARL VON MOLTKE

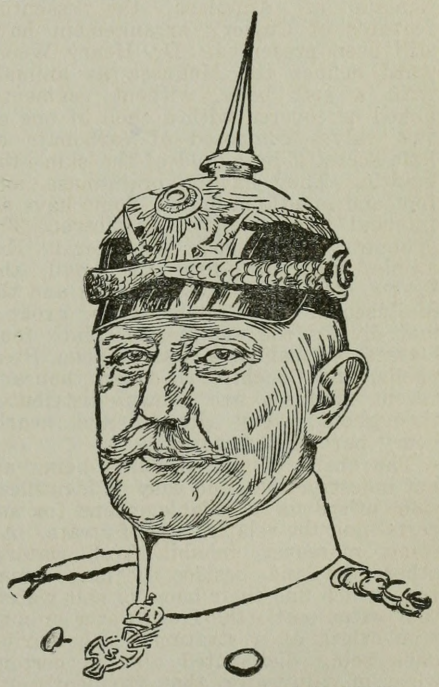
officer. At the age of 11 he was sent to the military school at Copenhagen, and, after several years of training, entered the Danish army. But in 1819, led by his German sympathies, he resigned his commission and went to Berlin to continue his studies in the Prussian capital. After 10 years of study and a few more of staff service he went to Turkey

on a furlough, and acted (1835-1839) as military adviser of the Sultan. On his return to western Europe he resumed his connection with the Prussian staff. The unusual character of Von Moltke's genius did not appear till Prince William ascended the Prussian throne as regent in 1858. Bismarck became prime minister, Von Roon was made secretary of war, and Von Moltke was appointed chief of staff. Von Moltke planned the Danish campaign of 1864. His plan was to "move separately and strike together," and by this method he humbled Austria at Sadowa, July 3, 1866. He keenly foresaw the war with France (1870-1871), and perfected his plan of campaign two years in advance of the outbreak of hostilities. War was declared by France, July 19, 1870. By the middle of August Bazaine, with 180,000 Frenchmen, had been penned up in Metz, and on Sept. 1 Napoleon and Marshal Macmahon were entrapped at Sedan and obliged to surrender with 90,000 men. On Sept. 19 the Germans were before the walls of Paris. His country showered honors on him, he becoming a count, a marshal, and a life-member of the Prussian House of Lords. He was retired for age in 1888, and died in Berlin, Prussia, April 24, 1891.

MOLTKE, HELMUTH VON, German soldier; born in 1848. He was the nephew of the famous strategist of the same name associated with Bismarck in the Franco-Prussian War of 1870. Taking up a military career in his youth, his natural executive ability, as well as family influence, insured his rapid progress in promotion to highest rank. In 1906 he became Chief of the General Staff of the German military forces. It is generally believed that General von Moltke, together with the Crown Prince, was the most powerful influence in hurling Germany into the war, beginning in 1914. He was, at any rate, one of the chief figures in the military clique which precipitated hostilities, under the firm belief that Germany was invincible. Because of disagreement with the Emperor, he was dismissed from active duty in December, 1914, more or less in disgrace, and was succeeded by General von Falkenhayn. Suffering keenly under this humiliation, his health deteriorated, and in June, 1916, he died while in the act of delivering an address.

MOLUCCAS, or SPICE ISLANDS, a name which was originally confined to the five small islands of Ternate, Tidore, Motir, Makian, and Batshian, but now applied to the widely scattered group lying between Celebes and Papua; area, 43,864 square miles; pop. (1917) Amboyna, 360,934; Ternate, 200,135. The S. portion being governed directly by the Dutch, and the N. indirectly through native sultans. The islands (several hundreds in number) are nearly all mountainous, mostly volcanic, and earthquakes are by no means uncommon. Cloves, nutmegs, mace, and sago are exported to Europe; and birds'-nests, trepang, etc., to China. The Moluccas have been for centuries alternately in the possession of the Spaniards, Portuguese, and Dutch. They were twice taken by the British and given up to Holland, in whose possession they still remain. The natives belong to Malay and Polynesian races, and the general language on the coast is the Malay.

MOLYBDENITE, natural molybdenum sulphide, MoS_2. Resembles graphite in appearance, but is more bluish in color.



GENERAL HELMUTH VON MOLTKE

Crystallizes in the form of six-sided scales, or short prisms, and is soft and greasy to the touch. Specific gravity, 4.7. Contains about 60 per cent. molybdenum. It is found in many parts of the United States, in Canada, Germany, Norway, and New South Wales. The ore serves as raw material in the preparation of ferromolybdenum, which enters into the composition of self-hardening steel. It is also used in the manufacture of a blue pigment, and for the prepara-

tion of molybdic acid and various salts of molybdenum.

MOLYBDENUM, Mo, a metal discovered by Scheele in 1778, belonging to the group of metals which impart special properties to steel when added to it in very small amounts. Occurs as the sulphide (molybdenite), as lead molybdenate (wulfenite) and the oxide (molybdic ochre), and although widely distributed is not abundant. It is gray in color, has a specific gravity of 8.56, is softer than steel, malleable and capable of being forged and welded. The addition of a small amount of molybdenum to steel increases its tensile strength, toughness and fineness of grain.

MOMBASA (-bä'sä), or **MOMBAS**, a sea-port and the seat of administration of British East Africa, on the N. side of a small island 3 miles by 2½ miles, close to the coast, 150 miles N. of Zanzibar. Trade in (exports) ivory, gum, copal, copra, ochella weed, maize, and grain; carried on by natives of British India. Island and port mentioned as early as 1331. It was visited by Vasco da Gama in 1497, held by the Portuguese from 1529 to 1698, and by the English from 1824 to 1826. Pop. estimated at 30,000, mostly Arabs and Swahili.

MOMENTUM, in mechanics, the force possessed by matter in motion; the product of the mass by the velocity of a body. Thus a ball of four pounds' weight moving uniformly at the rate of 18 feet in a second would have double the momentum that one of three pounds' weight moving at the rate of 12 feet per second would possess, for 4×18 is 72, and $3\times12=36$, or half as much. The force of percussion, that is, the force with which a moving body strikes an object, is the same in amount as the momentum of the former.

MOMMSEN, THEODOR (mom'zen), a German historian; born in Garding, Schleswig, Nov. 30, 1817. He was Professor of Law at Leipsic, 1848-1850; of Roman law, at Zürich 1852-1854, at Breslau, 1854-1858; of ancient history at Berlin, 1858; member of the Prussian House of Delegates. His great work is "Roman History" (1854-1856). He wrote besides, "Roman Chronology down to Cæsar"; "History of Roman Coinage" (1860); "Roman Investigations" (1864-1879); "History of Roman Political Law." He was editor-in-chief of the great "Body of Latin Inscriptions" (1863-1893). He died at the age of 86, at Charlottenburg, Prussia, Nov. 1, 1903.

MONA, a small island of the West Indies, 42 miles W. of Porto Rico, in the middle of Mona Passage; area, nearly 10,000 acres. It is a coral formation. The general level being about 60 feet above the sea-level, with a range of hills on the E. side of the island. All kinds of tropical fruits grow in profusion. It is the nesting place of thousands of green turtles. Mona came into possession of the United States under the peace treaty with Spain in 1898. The only resident on the island is a lighthouse keeper.

MONACHISM (mon'a-kizm), the system of monastic life; monkery, monkishness. The ultimate fact on which monachism rests is that many people are born with a tendency to contemplation and, if pious, consider that they will be more free from temptation to sin by retiring from the ordinary world. Hot climates strengthen these feelings, and monachism has flourished most luxuriantly in Asia, Africa, and southern Europe.

Ethnic Monachism.—The most gigantic and earliest development of monachism was that of BUDDHISM (*q. v.*). The Jain system is also monastic. Brahmanism possessed it to a considerable extent. Of the Hindu Triad the worship of Brahma scarcely exists; connected with that of Vishnu and Siva there are many monastic orders or sects. Most of them arose about the same dates as the leading religious orders of Christendom were instituted.

Jewish Monachism.—The Nazarites were an ascetic sect temporarily under vows, but not bound to celibacy, which is nowhere enjoined even on priests under the Mosaic law. But genuine Jewish monasticism, with its celibacy as well as its asceticism and seclusion from society, seems to have begun with the ESSENES (*q. v.*), and to have been continued by the THERAPEUTÆ (*q. v.*).

Christian Monachism.—In the 2d century certain persons who aimed at stricter piety than their neighbors often held converse together without quite separating from society. They were called ascetics, and were the successors of the Therapeutæ, who prepared the way for the rise of monachism. In the 3d century Paul ranged through the desert of Thebais in Upper Egypt during the Decian persecutions. He and others who acted similarly were called anchorets or anchorites, or persons who retire from society, also eremites or hermits, that is, persons who live in the desert (see HERMIT). They frequently resided in caves. In 305 Anthony, an Egyptian monk, collected many of the eremites into communities. These were called cœnobites from their living in common. The same discipline spread through western Asia and

Europe. From among the Eremites who lived apart from each other sprung the Sarabaites and Gyrovagi (Vagabond monks), disreputable races, the Stylites, or Pillar Saints, associated forever with the name of Simeon, who died in 451. In the 6th century St. Benedict introduced new regulations, and all the monastic orders for some centuries were Benedictine. The wealth acquired by monastic communities led to corruption and early in the 13th century there arose mendicant orders vowed to poverty (see MENDICANT ORDERS). At first all the monks were laymen; now they consist of three classes: (1) Priests; (2) choir monks, in minor orders; and (3) lay-brothers, who act as servants and laborers. The influence of the mendicant orders was on the wane at the Reformation, and the Jesuits took their place. At that date many monasteries in England and elsewhere were deprived of their endowments and suppressed. Those of France were swept away in the first Revolution. See MONASTERY: MONK: NUN.

MONACO (mon'ä-kō), a principality lying between the French department of Alpes Maritimes (Nice) and the Mediterranean. In 1861 the Prince of Monaco sold the departments of Mentone and Roccabruna to France for $800,000; and the principality has since been confined to an area of 8 square miles. A constitution was granted in 1911. Pop. about 25,000. The prince (a scion of the house of Grimaldi) exercises both legislative and executive functions, while the people are exempt from taxation, as the revenue is almost entirely derived from the rents of the gaming establishment. The capital, Monaco, pop. about 2,300, is a renowned watering-place. About a mile to the E. is MONTE CARLO (*q. v.*), a collection of hotels and villas which have sprung up near the luxurious gardens of the handsome gambling casino, established here in 1860.

MONAD, in chemistry, univalent element. A name given to those elements which can directly unite with, or replace, one atom of hydrogen in a compound. The monad elements are hydrogen, chlorine, bromine, iodine, fluorine, lithium, sodium, potassium, ruthenium, cæsium, and silver. In philology, a monosyllabic word or root, specifically, a monosyllabic root of the isolating class of languages. In philosophy, a term first used by Giordano Bruno (1548-1600), and adopted in a slightly different sense and brought into prominence by Leibnitz (1648-1716).

MONAGAS, state of Venezuela, on the N. E., where it is washed by the Atlantic. The Venezuelan Andes traverse to the plain of Barcelona, with the Coast Range (Sierra del Mar) rising from the sea. Cattle-raising considerable, with coffee and cacao. Capital, Maturin. Area, 28,000 sq. kil. Pop. (1917) 90,439.

MONAGHAN, county in Ireland, ancient Gaelic name Muineachan. Area, 477 square miles. Watered by Finn and Blackwater. Manufactures include linen, stock-raising. Mainly agricultural with stone quarries. Pop. about 70,000.

MONARCHY, a state or government in which the supreme power is vested in the hands of a single ruler, and which is absolute, limited, or constitutional, hereditary, or elective. An empire; a kingdom; the state or country ruled by a monarch, absolute or constitutional.

MONASTERY, a class of structures which arose in the Middle Ages to meet the requirements of the large number of monks that then existed. Records of abbeys as early as the 7th century show that the arrangements were similar then to those of the 12th century. There was, however, one entirely new element, the church, the largest and most important building, which regulated the position of all the rest. In N. climates the cloister was usually situated on the S. side of the church, for the sake of the sunshine and warmth. It was composed of an open courtyard, square or oblong in shape, surrounded by an open arcade, or covered way. The church formed the N. side, and on the E. side was situated the chapter house, with the monks' dormitory over it. The chapter house in the Cistercian monasteries was usually divided into three compartments by the pillars bearing the arches. The abbot's seat was opposite the entrance door, and a stone seat all round accommodated the monks. The sacristy is placed on the N. side of the chapter house, with a door from the church. A similar cell or "parlor" occupies the S. side; then comes a passage or "slype" leading from the cloister to the gardens, etc. Beyond this is the fratry or day room of the monks, a long vaulted apartment running S., having a row of columns in the center and open windows.

The S. side of the cloisters generally gave access to the refectory, a large, rather ornamental chamber, usually with an open wooden roof. It was sometimes placed parallel and sometimes at right angles to the cloister. Opposite the door to the refectory and in a vaulted recess stood a fountain or basin where the monks might wash. Adjoining the refectory were the kitchen and offices.

Along the W. side of the cloister, and sometimes extending much farther, lay the hospitium or guest-house, where all travelers were received. A very important room in the monastery was the scriptorium or library, in which the MSS. were written and illuminated. The abbot's lodge formed a separate edifice, as also did the infirmary. The whole establishment was surrounded by a wall, and provided with proper gates and defenses.

In later times the simplicity of the plan was broken in on. The monks, desirous of more comfortable quarters, divided the dormitory and made it into cells. The early simplicity was departed from, and the monastic buildings of the 15th century are rich in decoration. The monasteries of the other orders were, generally speaking, similar to those of the Cistercian, except in the case of the Carthusians. In their convents, where absolute solitude and silence were required, each monk had a small house and garden to himself.

MONASTIR (mō-näs-ter'), or **BITOLIA**, formerly second town in Turkish Macedonia; 90 miles N. W. of Salonica. It manufactures carpets and silver filigree, and trades in corn and agricultural products. Under its ancient name of Pelagonia it gives title to a Greek archbishop. The Serbs captured the town in the Balkan War 1912. Since then a part of Serbia. In November, 1915, the town was captured by the Austrians and Bulgarians, who, however, lost it again to the Allied forces in November, 1916. See WORLD WAR.

MONAZITE, an ore of cerium metals, consisting of cerium-lanthanum-didymium phosphate, (Ce,La,Di,) PO_4, and containing thorium and other rare earth metals. The thorium content varies from nothing up to 18 per cent. thorium oxide. Monazite occurs either as yellowish brown and translucent or dull brown and opaque. S.G. 4.9 to 5.3, hardness 5½. River sands frequently contain this mineral in small amounts, this source being worked commercially in Brazil and North and South Carolina. The ore is mined in many parts of the United States, in the southern Urals and in Norway. Thorium is used in the manufacture of incandescent gas mantles and cerium for pyrophoric alloys.

MONBUTTU, or **MANGBATTU**, a country in central Africa. Its area is about 4,000 square miles. Pop. about 1,500,000. The soil is fertile and produces tobacco and sugar cane. The inhabitants were formerly cannibals, but the country in recent years has become almost depopulated by slave traders.

MONCTON, a town and port of entry of New Brunswick, on the Petitcodiac river, 89 miles N. E. of St. John. It is at the head of navigation on the river, has a fine harbor, and contains many important factories in leather, hats, foundry materials and flour and planing mills. A center for lumber and farm products. Pop. about 12,500.

MOND, LUDWIG, German chemist; born at Cassel, Hesse-Nassau, in 1839. He attended Marburg and Heidelberg universities, and after graduating worked in England at a Leblanc soda factory, where he succeeded in experiment to save the calcium sulphide lost in the process of manufacture. After living for a time in Utrecht he started an alkali works in England, developing new methods of making bleaching powder. He gave liberally to the work of promoting chemical research and provided funds for the establishment of the David Faraday Laboratory of the Royal Institution in London. He died in 1909.

MONDAY (that is, moon-day; Anglo-Saxon, Monandæg; German, Montag), the second day of our week, formerly sacred to the moon.

MONDELL, FRANK WHEELER, member of the House of Representatives from Wyoming and majority leader of the Republican party in the 65th Congress (1919). Born in St. Louis, 1860, later settled in Wyoming in 1887. From 1890 to 1895 he was mayor of Newcastle, Wyoming. He was elected to Congress for the first time in 1895, and while he was defeated in 1897 for re-election, he returned to Washington as Congressman-at-large in 1899 and for twenty years has never failed to be re-elected. A member of important committees in the House, including Ways and Means Committee, Representative Mondell always voted as a regular Republican.

MONDOVI (mōn-dō-vē'), a cathedral city of Italy, 58 miles S. of Turin. Here April 22, 1796, the Sardinians were totally defeated by Napoleon. Pop. about 16,000.

MONEL METAL, an alloy made from the nickel-copper ores of Ontario, and containing 67 per cent. nickel, 28 per cent. copper, 5 per cent. iron and manganese. It is strong, tough, and ductile, will not rust, and is resistant to the action of acids and alkalies. These properties render it valuable in marine engineering and the construction of chemical equipment.

MONESSEN, a borough of Pennsylvania in Westmoreland county about 40 miles S. of Pittsburgh. It is on the Monongahela river and on the Pennsylvania and the Pittsburgh and Lake Erie railroads. It is an important industrial city and contains large steel and tinplate works. Its other industries include wire-fence factories, lumber yards and brick works. Pop. (1910) 11,775; (1920) 18,179.

MONET, CLAUDE, a French landscape painter, leader of the Impressionist School; born in Paris 1840. He drew directly from nature, producing wonderful effects of light and air, and endeavoring to catch the transitory aspect of scenes. For twenty years he labored before his views were accepted, traveling much of the time studying foreign art. His first painting that expressed his artistic methods was "Impression—Rising Sun" (1874). His earlier style is represented by "The Breakfast" in the Luxembourg, Paris. "The Orchard," and "Bordighera," produced later, show his wonderful handling of light effects. Among the best of his late productions are "Waterloo Bridge" (1904); "Palazzo Dario, Venice" (1908); "Rouen Cathedral"; "Water Lilies"; "View of the Thames," all in the Luxembourg Gallery.

MONEY, a term used to describe the medium of exchange of standard value of any country. Gold, silver, nickel, copper are the coinage of modern nations, but baser metal coinage, and shells, grains, sheep, wampum, furs, and other commodities have been the medium of exchange among primitive people. Money is the measure of value, and buying and selling not only apply relative values to things bought and sold, but to all things that could be sold for money, all credit being dependent on this fact. By standard of value we mean a measure of comparing values at different periods. The measure of values considers the estimation of commodities and at the same time the standard of values at different periods; often called the standard of deferred payments. Credit organization calls for future money payments, goods being transferred for a promise to pay, and as this may cover a considerable period stability in money value is of first importance. Precious metals as a medium were chosen by advanced nations for physical characteristics and also for economic conditions, and because they are durable, portable, and easily divided into parts and are relatively of stable value which rarely fluctuates. Inferior metals have much the same advantages as a medium. With paper, used in greater quantity than metals, the stability of its values is the most important question. All money value is established by the law of supply and demand, or by the costs of production, that is, the law of market value, and of normal value. The values of money are expressed in money as prices, and conversely. To say that prices are high, or low, is to say that money is cheap, or dear. Prices rule high when money is cheap, and low prices prevail when money is dear. We say wheat has gone up in price when it is sold for a dollar a bushel, and was previously 50 cents; but on the other hand the wheat price of money has dropped, because it took two bushels of wheat to obtain a dollar, and then only one bushel. The value of money depends on the quantity in existence, but under normal influences an increase in the quantity lowers its value, while a decrease in the supply raises it. All increase in the world's money supply raises prices caused by loss of value. The purpose of monetary laws is to adjust supply to demand, providing automatic regulation of the amount of money. Free coinage—generally provided for in a metallic currency system —by attracting supplies of metal for that purpose, will to some degree correct and adjust conditions. Between nations using the same standard, metal passes back and forth so that there is never either a lack or a redundancy. Abundant money means high prices and then imports exceed exports. Payment of unfavorable balances will cut down the money supply and lower prices. Scarce money brings low prices, and exports surpass imports and the favorable balance brings gold into the country—thus international trade adjusts and corrects local money prices.

The value of money depends on supply and demand as with all other commodities. Increased demand for money is caused by whatever increases the volume of exchanges, the demand diminishing as the volume diminishes. The demand for money is also determined by rapid monetary circulation, and use of credit, each economizing the use of money. Savings banks quicken the circulation of money by collecting the hoards of poor people and putting the money into circulation. Credit is of first importance in influencing money demand, as only balances are paid in money. The country storekeeper who takes farm supplies on an account and pays in goods illustrates how credit lessens the demand for money. Where there is an abundance of anything the demand increases. A reduced supply lessens the demand and prevents prices from falling.

Paper money is of two classes, convertible and inconvertible. Convertible is secondary money, deriving its value from, and representing, metallic money, its value deriving from the relations of supply and demand. Convertible money is a receipt for gold and silver, and circulates like metallic money in another form. There is also a paper money called bank money. Depositors of metallic money discovered that coin would not be demanded at any given time for the full amount of outstanding notes, and thus a much larger sum than the metallic reserve could be kept in circulation. Notes were therefore issued in excess of the reserve, but convertible into coin. Bank money increases the volume of monetary circulation, and as it saves metal saves value to the community. When a government or bank fails to redeem their paper, it falls in value and coin rises. Monetary circulation for trade needs have created composite money systems. Under a single gold standard, paper is used for large and sil ver for small sums. Under a single silver standard, gold might well be used for large payments except for its expense, and payments could also be made in paper, as was the case in Germany in 1875.

MONEY, SIR LEO GEORGE CHIOZZA, English expert on finance and economics, of Italian origin; born in Genoa, Italy, 1870; was educated in England and became managing editor of "The Commercial Intelligence" (1898-1903); became especially expert on income tax data, on which subject he was chief witness before a commission appointed to inquire into the subject. He was a member of the Commission on Home Work (1907-1908); during the war he was a member of the War Trades Advisory Board, and Parliamentary private secretary to Lloyd George, while the latter was Minister of Munitions. In 1918 he abandoned the Liberal party to affiliate with the Laborites. Sir Leo has acquired much prominence as a writer on subjects connected with national finance and economics in general.

MONGHYR (mon-gēr') a picturesque city of Bengal, India, on the right bank of the Ganges, 80 miles E. by S. of Patna; it consists of the fort, a rocky crag projecting into the river, and the native quarters. From the 12th century onward it was a place of considerable strength; in the 18th century Mir Kasim made it his headquarters. He established an arsenal, and its armorers are still famed. Cotton, cloth, shoes, and furniture are manufactured. Pop. about 36,000.

MÖNG NAI, a state of British Burma. It has an area of 2,717 square miles. It is for the most part mountainous, but in the valleys rice, tobacco, and tropical fruits are produced. Pop. about 36,000. The capital is the city of the same name.

MONGOLIA (-gō'li-ä), a vast region of the N. E. of Asia, belonging to the Chinese empire, situated between China proper and Asiatic Russia; area, 1,367,-600 square miles. A great part of it is occupied by the Desert of Gobi or Shamo, and on or near its borders are lofty mountain chains, the principal of which are the Altai, the Sayansk, the Khinghan, and the Inshan. The inhabitants lead a nomadic life. They possess large herds of cattle, sheep, and horses. The climate is intensely hot in summer and bitterly cold in winter. After China's revolution the autonomy of Mongolia was recognized by Russia, 1912, and that of Outer Mongolia in 1913. Since 1915 Mongolia has had its own coinage. Pop. about 2,600,000.

MONGOLIAN, in philology, an epithet sometimes applied to the whole class of Turanian tongues; sometimes specifically applied to that group spoken by the Kalmucks and other tribes from Tibet to China. In ethnology, one of the five great races of the world. The head is square; the face flattish, nearly as broad as long; the eyelids narrow, obliquely turned up at their outer angle; the nose flat, the cheeks projecting, the chin somewhat prominent. The hair is straight, the color black, that of the face and body yellowish. It includes not merely the natives of Mongolia properly so called, but the Tartars, the Chinese, the Japanese, the Samoeides, the Cochin Chinese, the Burmese, the Tamuls, the Turks, the Hungarians, and the Finns. Called also Mongolidæ, Mongoloids, and Turanians.

MÖNG PAI, a state of British Burma with an area of 660 square miles. The land is for the most part hilly. Rice is produced on irrigated land, and tobacco, sugar cane, cotton, and fruit are grown. Pop. about 21,000. The capital is the city of the same name.

MÖNG PAN, a state of Burma with an area of 2,299 square miles. It is for the most part undeveloped country. The northern part is covered with a dense jungle. Pop. about 19,000.

MONIS, ANTOINE ERNEST, a French statesman, born in 1846 at Châteauneuf-sur-Charente. Elected deputy 1885-1889. Senator and leader of the

Radical Socialist party in 1891. Minister of Justice in 1899-1902. Vice-President of the Senate, and Premier in March, 1911. He was succeeded in 1911 as Premier by Caillaux when the Chamber voted a lack of confidence in the Government. In December, 1913, he became Minister of Marine in the Cabinet of Dumergue. The "Figaro" newspaper charged that in 1911 Caillaux had induced him to hold up the trial of the swindling promoter Rochette until the charge was outlawed and Monis resigned.

MONISM, a philosophical theory that all being may ultimately be referred to one category. Thus idealism, pantheism, materialism are monisms, as opposed to the dualism of matter and spirit. See PHILOSOPHY.

MONITOR, the type of a family of lizards (*Varanidæ*). They are the largest of the lizard order, some species, such as the *V. Niloticus* of the Nile and Egypt, attaining a length of six feet. They generally inhabit the neighborhood of rivers and lakes, and feed upon the eggs of crocodiles, turtles, and aquatic birds.

MONITOR, the popular name for a class of very shallow, heavily-armed iron-clad steam vessels, invented by Ericsson, carrying on their open decks either one or two revolving turrets, each containing one or more enormous guns, and designed to combine the maximum of gun-power with the minimum of exposure. Monitors are so called from the name of the first vessel of the kind, built during the American Civil War, which proved its superiority in a famous engagement with the "Merrimac" in 1862, at Hampton Roads, at the mouth of James river, Va. The fight between the "Monitor" and the "Merrimac" was a terrific one, and lasted nearly four hours, the two vessels touching each other part of the time. The "Merrimac" at last gave up the contest, badly damaged, and so much disabled as to require the aid of tugs to get her away. The "Monitor" was uninjured. As the first encounter of iron-clad vessels, this contest created much interest in all maritime nations, though nowhere except in the United States navy was the monitor adopted as a distinct type of warship. The construction of monitors is thought to have led to that of torpedo boats.

MONK, a male religious living in community (except the Chartreux and Camaldoli, who are strictly solitary), bound by rule and practicing the counsels of perfection. The name was in universal use till the rise of the friars in the 13th century.

MONK, GEORGE, DUKE OF ALBEMARLE, an English military commander; born in Potheridge, Devonshire, England, Dec. 6, 1608. Being a younger son, he entered the army as a volunteer, and served under his relation Sir Richard Grenville, in an expedition to Spain, and afterward served for some years in the Netherlands. On the breaking out of the war between Charles I. and the Scots, in 1639, he obtained a colonel's commission, and attended the king in both his expeditions to the N. When the Irish rebellion began in 1641, the lords-justices appointed him governor of Dublin. On his return to England he was sent to relieve Nantwich, where he was taken prisoner by the army of the Parliament, and sent to the Tower, where he remained till 1646. The royal cause being ruined, he obtained his liberty on condition of taking a command in Ireland, and concluded a peace with the rebels, which displeased Parliament. Cromwell made him Lieutenant-General, and gave him the chief command in Scotland. Monk distinguished himself at the battle of Dunbar, and afterward in the war with the Dutch. On the decease of the Protector and the resignation of power by his son, he took advantage of his position to crush the republicans, and recall Charles II. to the throne, and was as a reward created Duke of Albemarle. In 1664 he was appointed admiral of the fleet in conjunction with Prince Rupert, and in 1666 obtained a great victory over the Dutch. He died Jan. 3, 1670, and was buried in Westminster Abbey.

MONKEY, in forging, a vertical hammer, consisting of a long bar of iron, running loosely through an eye, several feet above the anvil, and terminating at the foot of a mass of iron, called the ram. The shaft is raised by a chain and drum driven by the engine and has an automatic releasing apparatus, which is regulated to drop the monkey at the required height, say with a range of from 2 to 5 feet. In pile-driving, the weight of a pile or post driver, which is raised by a grapple and chain, and, being detached, is allowed to fall in its guides onto the head of the pile. In zoölogy (1) A popular name for any one of the quadrumanous mammals having a well developed tail, those wanting tails being called apes. (2) A quadrumanous mammal having a tail and callosities, but no cheek pouches. The Capuchin monkey is the genus *Cebus;* the Diana monkey, *Cercopithecus diana;* the howling monkey is the genus *Mycetes;* the proboscis monkey is *Semnopithecus larvatus;* the sacred monkey is the *Semnopithecus en-*

tellus; the silver-haired monkey, *Lagothrix humboldtii;* and the spider monkeys, the genus *Ateles.* (3) Plural: The mammalian order QUADRUMANA (*q. v.*). The strepsirhine monkeys are the lemurs, the platyrhine monkeys are confined to America, and the catarhine monkeys are found only in the Old World.

MONMOUTH, a city and county-seat of Warren co., Ill.; on the Minneapolis and St. Louis, Rock Island Southern, and the Burlington Route railroads; 179 miles S. W. of Chicago. It contains Monmouth College (Unit. Presb.), the Warren County Library, a business college, high school, waterworks, gas and electric lights, street railroads, daily and weekly newspapers, and several National banks. It has manufactories of sewer pipe, cigars, soap, agricultural implements, and one of the most extensive crockeryware plants in the United States. Pop. (1910) 9,128; (1920) 8,116.

MONMOUTH, the county town of Monmouthshire, England. Its chief features are the ruined castle of John of Gaunt, in which Henry V. was born; the parish church, dating from the 14th century, and restored in 1882, with a graceful spire 200 feet high; the bridge over the Monnow (1272), with its "Welsh gate," and near it a small Norman chapel; a fragment of a Benedictine priory, with "Geoffrey of Monmouth's study"; the new town hall, built in 1888, and a grammar school (1614). Pop. about 5,500.

MONMOUTH, BATTLE OF, an engagement between the American forces under General Washington, and the British under Sir Henry Clinton, near Freehold, Monmouth co., N. J., June 28, 1778. General Washington, having overtaken the British forces which had previously evacuated Philadelphia for the purpose of embarking at Sandy Hook, ordered the advance, under General Charles Lee, to attack the enemy. The Americans were at first successful, but from some unknown cause they were seized with a panic, and fell back to the main body. General Washington, with the latter succeeded in rallying the fugitives, and repulsed the British. The American loss was 69 killed and 160 wounded; that of the British, nearly 300 killed and 100 prisoners, including the wounded.

MONMOUTH COLLEGE, a coeducational institution in Monmouth, Ill.; founded in 1856 under the auspices of the United Presbyterian Church; reported at the close of 1919: Professors and instructors 26; students, 254; president, T. H. McMichael, D. D.

MONMOUTH, JAMES FITZROY, DUKE OF, a natural son of Charles II. of England; born in Rotterdam, April 9, 1649. At the age of 14 he was created Duke of Monmouth, and two years later was made Master of the Horse. He was concerned in various plots which had for their object the exclusion of the Duke of York from the crown; and he was, in consequence, ordered by Charles to quit the kingdom. On the accession of James II., being urged to the act by some of his partisans, he left Holland and landed at Lyme, with scarcely 100 followers (June, 1685), but their numbers were soon increased, and he assumed at Taunton the title of king and asserted the legitimacy of his birth. The royal forces were sent against him, and an engagement took place at Sedgmoor, near Bridgewater, July 6. The rebels were defeated, and the duke himself was made prisoner. He nobly refused to betray his accomplices, and conducted himself with much firmness on the scaffold, where his head was severed from his body, after four unsuccessful blows, July 15, 1685.

MONMOUTHSHIRE, county in England, formerly part of Wales, bounded on the S. by the Bristol Channel. Area, 545 square miles; mountainous, and watered by the Usk, Wye, and Monnow. Has large collieries, and agricultural products include wheat and barley. Welsh still largely spoken. Capital, Monmouth; chief city, Newport. Pop. about 400,000.

MONOCHORD, in music, an ancient instrument with one string which was played as a guitar; it grew into a manichord, in which numerous strings were played by quills. Also a single string streched across a board or soundboard, under which a movable bridge can be moved at pleasure. By placing under the string a diagram of the proportionate lengths of string required for the production of just intervals, the ear can be trained. The results obtained from it were called the harmonical canon. It is said to have been invented by Pythagoras.

MONOCHROME, a painting executed in a single color, but relieved by light and shade. A drawing in chiaro-oscuro is a monochrome, whether in black and white, or in any color and white. The silhouette is not a monochrome, though executed in a single color.

MONOCLINIC SYSTEM, in mineralogy and crystallography, having two of the axial intersections rectangular and one oblique; having the lateral axes at right angles to one another, one of them,

moreover, being oblique to the vertical axis and the other at right angles to it.

MONOGRAM, a character or cipher composed of one, two, or more letters interwoven, and used as a sign or abbreviation of a name or word. The term is now applied to conjoined initials of a personal name on seals, trinkets, letter paper, etc., or employed by printers, painters, engravers, etc., to distinguish their work.

MONO LAKE, a "sink," or lake, of Mono co., Cal., on the E. slope of the Sierra Nevada, about 12 miles S. W. of Aurora; nearly circular in outline; area about 200 square miles. It receives several large streams, but has no apparent outlet. The waters are strongly alkaline, and contain no fish; but a species of insect deposit their ova on the surface in such immense quantities that they sometimes appear like small islands. Insects and eggs are dried and eaten by the Digger Indians.

MONOLITH (mon'-), a column or block formed of a single stone; the term is applied to such erections as the obelisks of Egypt. One at Baalbek, Syria, measures 70-21-14 ft.

MONOMANIA (-mā'ni-ä), madness or derangement of the mind with regard to one subject only.

MONOMETALLISM, the fact or principle of having only one metal as a standard for coinage. See BIMETALLISM.

MONONGAHELA (-hē'lä), a river which rises in West Virginia and flows N. to Pittsburgh, where it unites with the Allegheny to form the Ohio.

MONONGAHELA CITY, a city in Washington co., Pa., on the Monongahela river, and on the Pittsburgh and Lake Erie, and the Pennsylvania railroads; 21 miles S. of Pittsburgh. It is in a coal, natural gas, and petroleum region, and has electric lights, daily and weekly newspapers, and several private banks. It was the first city in the United States to engage in the manufacture of carborundum. Other industries include foundry and machine shop products, paper, flour, and planing mills, etc. Pop. (1910) 7,598; (1920) 8,688.

MONOPETALOUS (-pet'ā-lus), in botany, having the petals united together into one piece by their edges.

MONOPOLI (mō-nop'ō-lē), a town of southern Italy, on the Adriatic, 43 miles N. W. of Brindisi, with a cathedral, ancient walls, and a castle built in 1552 by Charles V. Pop. about 25,000.

MONOPOLY, an exclusive trading right over; the exclusive right or privilege of production, sale, or purchase of any commodity; the sole right or power of selling any commodity; the exclusive right or privilege of trading in any community, or with any country; license from the proper authority to any person or company to make, sell, export, import, buy, or otherwise deal in any commodity or number of commodities. Thus, a patent for an invention gives the patentee the exclusive right of making or dealing in the article patented. Also the assuming or claiming right to or possession of anything to the exclusion of others; as, He claims a monopoly of the conversation.

In law, the only monopolies that the laws of the United States and the individual States look on with favor consist of the Postoffice, which is a government monopoly, and the rights granted to individuals under the Patent and Copyright laws; a patent covering a period of 17 years with no renewal except by a special act of Congress, and a copyright 28 years with a renewal of 14 years if certain conditions are complied with. Monopolies commonly known as trusts are looked on with odium, and various States have enacted laws making a trust an illegal combination of individuals. See TRUST.

MONORAIL, a transportation system which utilizes but a single rail.

Experiments have been along two distinct lines—the type in which the car runs upon a single rail, but in which auxiliary guide rails of wheels are used, and the type which maintains its equilibrium by use of the gyroscope. Various models of the former type have been designed, in some of which the track is laid on the ground, in others the track is suspended. These systems have been used largely as novelties at various amusement parks or expositions. Three names which stand out prominently in the development of the gyroscope type are Louis Brenan, an Englishman, Paul Froelich, a German, and a Russian named Schelowsky. While this has never operated to any extent, in 1909 a model of the Brenan car, 14 feet long, with a carrying capacity of forty passengers, went through a series of tests before the Royal Society. The car was run on a circular track 220 yards in circumference, and was able to maintain its equilibrium while in motion in spite of the efforts of its forty passengers to overturn it. This car weighed twenty-two tons, and power for both locomotive and for the gyroscopes was supplied by a gasoline motor. The gyroscope apparatus weighed less

than 5 per cent. of the total weight of the car.

MONOTHEISM (mon'ō-thē-izm), the term usually employed to denote a belief in the unity of the Godhead, or belief in and worship of one God. It is thus the opposite of polytheism.

MONOTYPE, a machine for type setting and casting, used principally in large newspaper offices. The work is first done by a kind of typewriter, on a roll of paper which, instead of receiving the impression of letters, is assailed by a series of punches which drive neat little holes through it. The roll of paper steadily revolves and then winds itself on another spool. When this is full it is fastened in another small machine, a lever is pressed and almost instantly a glistening type appears and is followed by others, till a line of type is formed. A metal arm picks up this line and places it in the galley, and when the latter is filled it is ready for the printer. Each type is made on the spot. The machine produces automatically a perfect justification, or spacing, and one operator can attend to 10 machines, each doing the work of three compositors.

MONREALE (mon-rā-ä'le), a city of Sicily, 5 miles S. W. of Palermo. The "royal mount," from which it gets its name, is 1,231 feet high, and on it stands the famous cruciform Norman cathedral (1176), which measures 333 by 132 feet, and within is entirely covered with mosaics. Pop. about 20,000.

MONRO, GENERAL SIR CHARLES, British army officer; born Jan. 15, 1860. Commander-in-Chief, India, since 1916; entered the army in 1876. Captain 1880, major 1898, lieutenant-colonel 1903, colonel 1903, lieutenant-general 1915, general 1917. Served with the Northwestern Frontier Force, India, 1879-1880 (medal and 2 clasps); South Africa, 1899-1900 (Queen's medal); commanded 13th Infantry Brigade, Dublin, 1907-1912. Second Division, Aldershot, 1914. Commanded the 3d British Army in France in 1915. Appointed to Chief Command at the Dardanelles, Oct. 15 to January, 1916. It was General Monro who decided that the Allied Expeditionary Force should abandon the enterprise and evacuate the straits, which began in December and was carried out successfully without loss of life. On the resignation of Marshal French, General Monro succeeded Sir Douglas Haig to the command of the 1st British Army in France in February, 1916.

MONROE, a city of Louisiana, the parish-seat of Ouachita on the Ouachita river, the Arkansas, Louisiana and Gulf, the Vicksburg, Shreveport and Pacific, the St. Louis, Iron Mountain and Southern railroads. It has government buildings, a sanitarium, city hall, good schools, and parks. There is a considerable trade in cotton, and there are cotton seed mills, cotton compressors, manufactories of automobiles, wagons, bricks, lumber, etc. Pop. (1910) 10,209; (1920) 12,675.

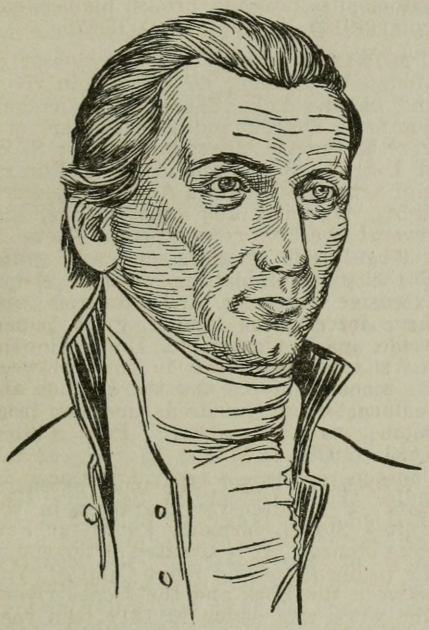
MONROE, a city and county-seat of Monroe co., Mich.; on the Raisin river, and on the Lake Shore and Michigan Southern, Detroit and Toledo Shore and Père Marquette railroads; 40 miles S. W. of Detroit. It contains a public library, high school, St. Mary's Academy, electric lights, National and other banks, and several weekly newspapers. There is a large trade in glass-sand and grain. The city has foundries, machine shops, extensive nurseries, and tanneries, and large interests in lumber, grist, paper, woolen goods, plaster, etc. Here, after the battle of Raisin river, in 1813, between an American force and the English and Indians, several hundred American prisoners were massacred. Pop. (1910) 6,893; (1920) 11,573.

MONROE, FORT, the most extensive work of a defensive character in the United States, formerly known as Fortress Monroe. It is situated at the end of the peninsula of Old Point Comfort, Va., between the York and the James rivers. The work was begun in 1817 (the year of the election of President Monroe for whom it was named). At the outbreak of the Civil War, it covered an area of 65 acres; the garrison consisted of 300 men, and the ordinance comprised 400 great guns. It was known that the Confederates had designs upon the fort, and Gen. B. F. Butler, commander of the Department of Viriginia, made it his headquarters and reinforced the garrison. The Nationals continued in possession till the close of the war. Since then an important artillery school has been located there.

MONROE, HARRIET, an American poet; born in Chicago, Ill., Dec. 23, 1860. She wrote "Columbian Ode" (1892), composed for the opening of the World's Columbian Exposition; "Valeria," etc. (1892); "John Wellborn Root" (1896); "Passing Show" (1903); "Dance of the Seasons" (1911); "You and I" (1914). Editor "Poetry" magazine since 1912.

MONROE, JAMES, an American statesman and 5th President of the United States; born in Westmoreland co., Va., April 28, 1758. Completing his education at William and Mary College,

he joined the Continental army in 1776. Took part in the battle of Trenton, Brandywine, Germantown, and Monmouth, rising to rank of colonel. Elected to the Assembly of Virginia, and in 1783 became a delegate to the Continental Congress. In 1785 he moved a resolution in Congress empowering that



JAMES MONROE

body to regulate interstate trade, and the discussion and adoption of this resolution led to further efforts toward the formation of a national government, that culminated in 1787 in the framing of the Constitution. While serving in Congress he married Miss Kortright. On leaving Congress after three years of service he was immediately elected to the Virginia Legislature, and in 1788 became a delegate to the Virginia convention that ratified the Constitution in which he opposed its adoption. As United States Senator he acted with the Republican party, with Jefferson and Madison, and denounced Washington's neutrality proclamation relative to the European conflict, advocating the cause of France as that of America's natural ally. Washington appointed him minister to France in 1794. On his return, in 1799, he was elected governor of Viriginia. In 1802 he was sent to France as envoy extraordinary by Jefferson to negotiate the LOUISIANA PURCHASE (*q. v.*). He was minister to Great Britain in 1803-1807, where he negotiated a treaty that proved unacceptable to the people and Congress of the United States. He retired to Virginia, but was again elected governor in 1811, and the same year appointed Secretary of State under Madison, combining also the functions of Secretary of War. In 1817 he succeeded Madison as President, and was re-elected to a second term. His administrations were noted for the purchase of Florida from Spain, the adoption of the Missouri Compromise, and the enunciation of the MONROE DOCTRINE (*q. v.*). Died in New York, July 4, 1831.

MONROE, PAUL, educator; born in North Madison, Ind., in 1869, attended Franklin College, Ind., and Chicago and Heidelberg universities. He became instructor of history at Columbia University, later speculating in education in its historic aspect, and lecturing at Yale and California universities as well as Columbia. During 1912-1913 reported on the condition of education in the Philippines. Edited "Encyclopedia of Education." His works include: "Source Book in the History of Education," and "Principles of Secondary Education."

MONROE, WILL SEYMOUR, educator; born Hunlock, Pa., in 1863; attended Stanford, and Jena, Paris, and Leipsic universities, becoming in 1896 professor of psychology at the Massachusetts State Normal School, Westfield. Since 1909 has taught at the New Jersey State Normal School, Montclair. He lectured before many universities in the United States and abroad, and has been delegate to many congresses and expositions. His works include: "Poets and Poetry of the Wyoming Valley"; "Educational Labors of Henry Barnard"; "Commenius' School of Infancy"; "Turkey and the Turks"; "In Viking Land"; "Sicily, Garden of the Mediterranean"; "Bohemia and the Czechs"; "Bulgaria and her People."

MONROE DOCTRINE, a policy of the United States, first definitely announced by President James Monroe, in his annual message to Congress, 1823, which contained the following sentences: "We owe it to candor and to the amicable relations existing between the United States and the allied powers, to declare that we should consider any attempt on their part to extend their system to any portion of this hemisphere as dangerous to our peace and safety. With the existing colonies or dependencies of any European power we have not interfered, and shall not interfere; but with the governments which have declared their independence and maintained it, and

whose independence we have on great consideration and just principles, acknowledged, we could not view an interposition for oppressing them, or controlling in any other manner their destiny, by any European power, in any other light than as a manifestation of an unfriendly disposition toward the United States." Also, "The American continents should no longer be subjects for any new European colonial settlement." President Monroe's mention of these subjects was occasioned by the formation in Europe, a few years previously, of what was called the "holy alliance" between Russia, France, Austria, and Prussia to maintain the monarchical system of government in Europe. It was supposed that they desired to extend their operations to the New World also, especially with reference to the colonies of Spain. The Monroe Doctrine was an issue in the discussion of the League of Nations Covenant, and the reservations to the Treaty passed in the Senate in 1919 specifically provided that the Doctrine should not be abrogated.

MONROVIA, the capital of Liberia It is situated on the mouth of the St. Paul river. It contains two colleges and is the seat of Protestant Episcopal bishoi and of an American and a Roman Catholic mission. Its chief exports are palm oil, coffee, cocoa, dyewoods, and rubber. Prior to the World War a large portion of trade was done with Germany. Pop. about 6,000.

MONS (môngs) (Bergen), the capital of the Belgian province of Hainault, on the Trouille, 38 miles S. S. W. of Brussels, formerly encircled by a line of fortifications. The Canal de Condé connects Mons with the Scheldt. The church of St. Waddru (1450-1589) is a masterpiece of Gothic; and there are a town hall (1458), a belfry (1662) 275 feet high, a good library, etc. The manufactures include woolen and cotton goods, cutlery, and sugar; while the vicinity forms an extensive coal field. Mons, occupying the site of one of Cæsar's camps, was made the capital of Hainault by Charlemagne in 804. Pop. about 28,000. Occupied by Germans during invasion of Belgium in 1914. Scene of first encounter betweer German armies and Anglo-French forces on Aug. 14, which led to the retreat of the Allies to the Marne.

MONSIEUR (mo-syuh') (abbreviated M.; plural Messieurs, abbreviated MM.) used without any addition, formerly in France designated the king's eldest brother. In common use it answers both to the English sir and Mr.

MONSIGNORE (mōn-sēn-yō're), a title of honor given to prelates of the Roman Catholic Church.

MONSON, SIR EDMUND JOHN, British diplomat, born at Charter Lodge, Kent, 1834. Educated at Eton and Balliol, Oxford. Connected with British legations at Paris, Florence, Washington, Hanover, and Brussels, until he resigned in 1865. Re-entered diplomatic service and was appointed consul at the Azores, 1869. Consul-general Hungary, 1871. Special agent in Dalmatia and Montenegro during Turkish War, 1876-1877. Afterward Minister to Uruguay, Argentine, Paraguay, Denmark, Greece, Belgium, and ambassador to Austria 1893-1896. To France 1896-1904. Made a baronet in 1905. Died 1909.

MONSOONS (-sönz'), a modification of the trade winds, operative from the Tropic of Cancer to lat. 7° S., and from the coast of Africa through the Indian Ocean and the Bay of Bengal to Japan and the western Pacific. There are two monsoons, the southwestern and the northeastern. The latter prevails from October to April, and the former from April to October. The bursting of the monsoon commences the rainy season in India, the southwestern bringing that of Bombay and central India, and the northeastern that of Madras and other parts of the coast of the country. The monsoons are caused by the unequal heating of the land and water and of the several land masses themselves in the regions which they affect. They bring rain to countries which would degenerate into deserts. Also any similar wind blowing half the year in one direction and half in the other.

MONTAGNARDS (mông-tä-nyär'), or simply **MONTAGNE** (mông-tä-nyuh') ("the Mountain"), the name given to the extreme democratic politicians in the first French Revolution, because they seated themselves on the highest benches of the hall in which the National Convention met. The body included both Jacobins and Cordeliers; its principal members were Danton, Marat, Robespierre, St. Just, and Collot d'Herbois, the men of "the Reign of Terror." The antagonistic party were "the Plain," the GIRONDIST (*q. v.*), who sat on the lowest benches, on the floor of the house.

MONTAGU, an illustrious English family which sprang from DROGO DE MONTACUTE, who came from Normandy with the conqueror. SIR EDWARD MONTAGU, Speaker of the House of Commons and afterward Lord Chief-Justice, died in 1557. The third son of Baron Edward

Montagu of Boughton was SIR HENRY MONTAGU, the famous lawyer and orator, who was Lord Chief-Justice, and created Lord Montagu of Kimbolton, and afterward Earl of Manchester. His son (2d earl) was a general in the parliamentary army, who gained distinction by his victory over Prince Rupert at Marston Moor, but subsequently gave in his adhesion to Charles II. on his restoration. The 4th Earl of Manchester was an enthusiastic follower of William III., fighting with him at the battle of the Boyne, and taking part in the siege of Limerick; he was eventually created Duke of Manchester in 1719 by George I. His descendant, the 8th duke, succeeded to the dukedom in 1890. The sixth son of Baron Edward Montagu of Boughton was SIR SYDNEY MONTAGU, whose son, EDWARD, was a considerable mathematician, and serving first in the army, then in the navy, became the first sole commander of the English navy, and was created by Charles II. Lord Montagu of St. Neots, Viscount Hinchinbroke, and Earl of Sandwich. His descendant, the 8th earl, succeeded in 1884.

MONTAGU, LADY MARY WORTLEY, an English author; the eldest daughter of Evelyn, Duke of Kingston; born in Thoresby, Nottinghamshire, England, about 1689. In 1712 she married Edward Wortley Montagu, whom she accompanied in 1716 on his embassy to Constantinople, from which place she wrote "Letters" to Pope, Addison, and others. She also first introduced the practice of inoculation for smallpox into England. Her "Letters" place her at the head of female epistolary writers in Great Britain. She died in England, Aug. 21, 1762.

MONTAGU, MRS. (ELIZABETH ROBINSON), an English social leader; born in York, England, Oct. 2, 1720. She married Edward Montagu, grandson of the 1st Earl of Sandwich. Her residence in Portman Square was the meeting place of the celebrated "Blue-Stocking Club" (origin of this famous term). Among her visitors and associates were Burke, Garrick, Sir Joshua Reynolds, etc. She wrote three of Lord Lyttelton's "Dialogues of the Dead" (4th ed. 1765); "Letters" (1809). She died in London, Aug. 25, 1800.

MONTAGU, RT. HON. EDWIN SAMUEL, British statesman; born 1879. Under-secretary of State under Lord Morley, 1910. Chancellor of the Duchy, 1915. Minister of Munitions in the first coalition government, and retired with Asquith, being succeeded in office by Lloyd George. Secretary for India in 1917 after the resignation of Austen Chamberlain. He visited India and in company with the viceroy investigated political conditions to prepare a system of self-government for the people of the country. A joint report on Indian Constitutional reforms was issued in 1918. Secretary for India 1919.

MONTAGUE, a town in Massachusetts which includes several villages of which the most important is Turners Falls. It is in Franklin co. on the Connecticut river and on the Boston and Maine, the New York, New Haven and Hartford, and the Central Vermont railroads. The town contains three public libraries, a hospital, and has important manufactures of cotton goods, paper, cutlery, silks, etc. At Turners Falls is a power plant which distributes power to the surrounding communities. Pop. (1910) 6,866; (1920) 7,675.

MONTAIGNE (môn*g*-täny'), **MICHEL, SEIGNEUR,** a French essayist; born in Château of Montaigne, Dordogne, France, Feb. 28, 1533. He was taught Latin from his cradle, and till he was six years of age was not permitted to hear any other language. He was then sent to the college of Guienne, at Bordeaux, where he remained seven years, having in that time gone through the whole college course. In 1554 he was appointed a judge in the Parliament of Bordeaux. In 1569 he married. During the civil wars he lived in retirement on his own estate. In 1580-1581 he traveled in Germany, Switzerland, and Italy, visited Rome, and was presented to the Pope. He was elected mayor of Bordeaux; and he held that office four years. The pestilence and the war of the League drove him from his château in 1586; and he did not return for two years. It was during this period that his friendship with Marie de Gournay began. She was attracted to him by his writings; Montaigne called her his adopted daughter. Montaigne's "Essays" (1588) rank among the few great books of the world. They have been translated into almost all languages. During the last few years of his life he suffered from most painful diseases, but he would have nothing to do with doctors or drugs. He died Sept. 13, 1592.

MONTALEMBERT (môn*g*-tä-lon*g*-bār'), **CHARLES FORBES RENÉ, COMTE DE,** a French publicist; born in London, England, May 29, 1810. His father was a French émigré, his mother English. Till 1819 Montalembert's education was carried on in England; but it was concluded in Paris. At the age of

20 he enthusiastically supported Lamennais and Lacordaire in their movement to promote liberty within the Church until "L'Avenir" (The Future), the organ of the movement, was condemned by an encyclical letter from the Pope. In 1835 he took his seat in the chamber of peers, and his ability soon made him famous. After the revolution of 1848 he was elected a member of the National Assembly. He was at first inclined to support Napoleon III., but was soon alienated by the policy of that emperor. Of his numerous writings the chief are: "Monks of the West" (1860-1868); "Life of Saint Elizabeth of Hungary" (1836); and "Political Future of England" (1855); "From St. Benedict to St. Bernard" (1895). He died in Paris, France, March 13, 1870.

MONTANA, a State in the Western Division of the North American Union, bounded by British Columbia, Alberta, Saskatchewan, North Dakota, South Dakota, Wyoming, and Idaho, admitted to the Union, Nov. 8, 1889; number of counties, 50; area, 145,310 square miles; pop. (1890) 132,159; (1900) 243,329; (1910) 376,053; (1920) 548,889; capital, Helena.

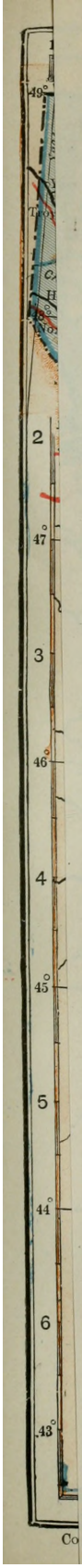
Topography.—The surface of the State is highly diversified. In the W. it is extremely mountainous. The Bitter Root Mountains from the W. boundary line, and E. of this the main chain of the Rocky Mountains cross the State. Between these ranges is a great basin, forming one-fifth of the entire area. E. of the Rocky Mountains is a rolling tableland, traversed by several large rivers. In the S. near the Yellowstone river the mountains reach an altitude of 10,000 feet and the peaks are perpetually covered with snow. Besides the prominent mountain ranges there are many spurs, detached ridges, and smooth, sloping buttes. The mountains are intersected by numerous valleys and cañons, through which flow most beautiful rivers. The highest point in the State, Emigrant Peak, is 10,969 feet high, and Mount Powell is 10,500 feet high. The principal river systems in Montana are the Shoshone, the Missouri, and the Yellowstone. The Shoshone rises in the Rocky Mountains in the S. part of the State, and after flowing W. turns N. and forms portion of the Idaho boundary. The Missouri river, formed by the Jefferson, Madison and Gallatin rivers crosses the N. E. part of the State and enters North Dakota. The Yellowstone, a tributary of the Missouri, rises in the Yellowstone Park in Wyoming, flows N. E. across the State through grand cañons and gorges, and enters the Missouri, a few miles E. of the North Dakota boundary.

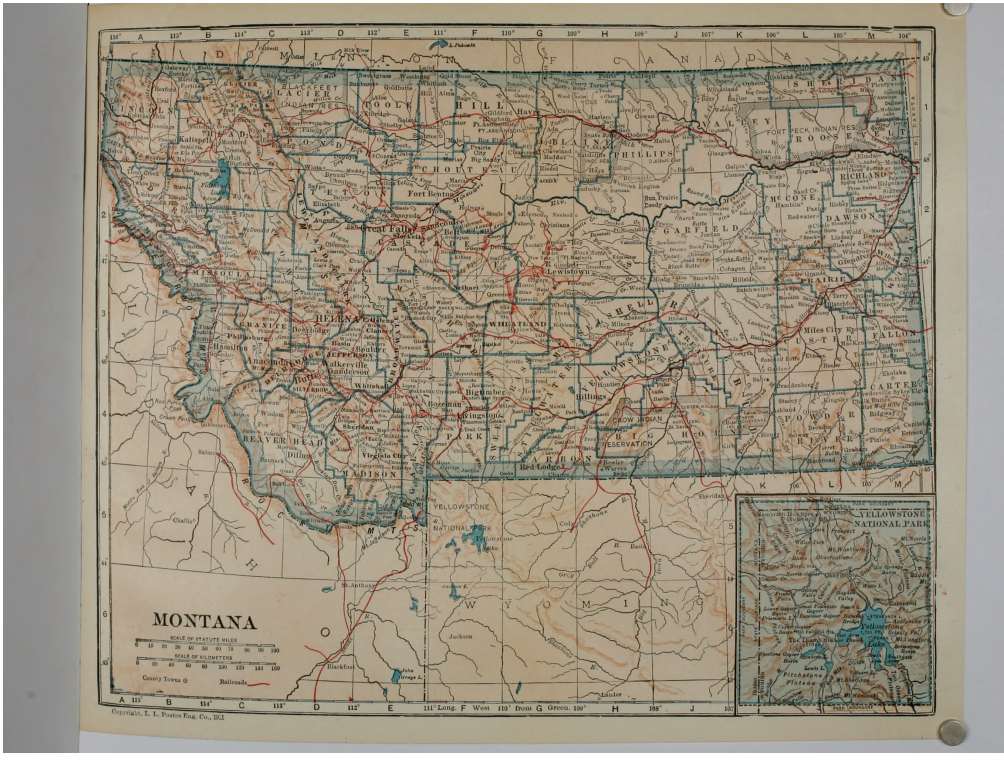
Geology.—The geological formations are separated into five distinct belts. In the extreme W. the Eozoic period predominates; this is followed by the Silurian, Jurassic, Cretaceous, and Tertiary extending E. in the order named. The Rocky Mountains are principally of igneous origin, and are made up of granite, basalt and metamorphic rocks, and at the base of the mountains are strata of Jurassic and Carboniferous rocks. Near the Missouri river fossil remains of sea serpents, snakes, snails, and petrified tree trunks abound.

Mineralogy.—Montana is one of the most important mineral-producing States. It is second in the production of copper, second also in the production of silver. Copper production began on an important scale in 1880 and has steadily increased since. The entire output is furnished by the Butte district. The gold production has been falling off in recent years from the deep mines, but the placer mines have shown an increase. Lead and zinc are produced in important quantities. The State has important coal production. The fields are widely scattered and the coal ranges from lignite to good grade of bituminous coal. Montana is among the first of the States in the production of precious stones. Other mineral products are cement, clay manufactures, iron ore, mineral waters, etc. The copper production in 1918 was 326,426,761 pounds, compared with 276,225,977 pounds in 1917. The silver production in 1918 was 15,341,793 fine ounces, valued at $15,341,793. The gold production was 153,375 fine ounces, valued at $3,170,600. The coal production in 1918 was 4,276,000 tons, an increase of about 50,000 tons over the production of 1917.

Soil and Productions.—The soil under proper irrigation, excepting in the mountain district, becomes quite fertile, and useful for agricultural purposes. The mountains are well covered with forests of willow, cottonwood, poplar, pine, spruce, fir, cedar, and balsam. There is little or no hardwood timber in the State. The valleys afford excellent grazing facilities and the "bunch grass," which covers the hillsides and plains, makes excellent fodder for cattle. The production and value of the principal crops in 1919 were as follows: corn, 1,728,000 bushels, valued at $2,851,000; oats, 6,120,000 bushels, valued at $5,569,000; wheat, 10,729,000 bushels, valued at $25,214,000; hay, 827,000 tons, valued at $19,021,000.

Manufactures.—The chief manufacturing industries of the State are concerned with the refining and smelting of copper and lead. There are also important meat packing plants and manufac-


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MONTANA
SCALE OF STATUTE MILES
SCALE OF KILOMETERS
County Towns
Railroads
YELLOWSTONE NATIONAL PARK
Copyright, L. L. Poates Eng. Co., 1921

tories of foundry and machine shop products, lumber and timber, railroad cars, etc. In 1919 the statistics of the manufactures of the State were as follows: number of establishments, 939; average number of wage-earners, 13,704; amount paid in wages, $13,001,000; value of materials used, $46,744,000; value of finished products, $84,446,000.

Banking.—On Oct. 31, 1919, there were reported 138 National banks in operation with $5,030,000 capital, $3,792,711 in outstanding circulation. There were also 256 State banks, with $8,290,000 capital, and $2,190,000 surplus; 9 private banks with $645,000 capital, and $49,000 surplus. The exchanges for the year ending Sept. 3, 1919, at the United States clearing house at Helena amounted to $109,910,000, an increase over those of the preceding year of $6,353,000.

Churches.—The strongest denominations in the State are the Roman Catholic, Methodist Episcopal, Presbyterian, North; Protestant Episcopal; Disciples of Christ; Regular Baptist, North; Methodist Episcopal, South.

Education.—The school population of the State in 1919 was 158,674. There were enrolled in the schools 122,000 pupils. The average daily attendance was 87,660. There were 749 female and 616 male teachers. The average monthly salary for elementary schools was $91.25, and for high schools, $114.00.

Transportation.—There were, in 1917, 4,930 miles of main line track, 205 miles of double track line, and 1,594 miles of branches. The total mileage in operation was 6,987. The roads having the longest mileage were the Chicago, Milwaukee and St. Paul, the Great Northern, and the Southern Pacific.

Finances.—The receipts for the year ending Nov. 30, 1918, were $9,254,263, and the disbursements $9,704,868. There was a balance at the end of the year of $2,583,810. The total indebtedness of the State was about $2,000,000.

State Government.—The governor is elected for a term of four years. Legislative sessions are held biennally, beginning on the first Monday of January, and are limited to 60 days each. The Legislature has 54 members in the Senate and 108 in the House. There are two representatives in Congress.

History.—Montana was partly included in the Louisiana Purchase, and partly in the Oregon country, acquired by the treaty with Great Britain in 1846. Till the discovery of gold in 1862 this region was but little visited, excepting by hunters, fur companies, explorers and missionaries. In 1864 the Territory of Montana was organized from parts of Idaho and Montana, and in 1875 Helena was made the capital. In August, 1873, several battles occurred between the United States troops and the Sioux Indians on the Yellowstone river, and in May, 1876, in an attack on the Confederated Sioux tribes, under Sitting Bull, in Rosebud river valley, General Custer and his entire force were massacred. This was followed by the removal of the Sioux and the opening of the country to settlement. In February, 1889, Congress passed the "Omnibus Bill" providing for the admission of Montana, Washington, and the Dakotas. A constitution was adopted in July, and on Nov. 8, 1889, Montana was admitted to the Union as a State.

MONTANA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS, an institution founded by the State of Montana in 1893 at Bozeman, Montana, for the improvement of its citizens in scientific agriculture and in the industrial arts. The State in 1893 granted to the college 140,000 acres of land; of these 26,000 have been sold and the remainder leased. The increased value of land and especially timber in the years 1918, 1919, and 1920 greatly increased the income of the college and placed it on a sure financial basis. Appropriations from the State amount to $85,000 annually. Enrollment is about 600.

MONTANA, UNIVERSITY OF, a co-educational non-sectarian institution in Missoula, Mont.; founded in 1895; reported at the close of 1919: Professors and instructors, 65; students, 796; volumes in the library, 45,000; income, $280,000; president, Edward O. Sisson, Ph. D.

MONTANISM (mon'-) the religious system of Montanus, an inhabitant of a Phrygian village called Pepuza, who, about A. D. 171, proclaimed himself the Paraclete or Comforter promised by Jesus (see PARACLETE). He multiplied fasts, forbade second marriages, did not permit churches to give absolution to those who had fallen into great sin, forbade all female ornaments, required virgins to be veiled. Jerome wrote against the Montanists, who continued till about the 6th century.

MONTARGIS (môn*g*-tär-zhē'), a town in the French department of Loiret, 47 miles E. by N. of Orleans. Here in 1371 is said to have occurred the famous judicial combat between the "dog of Montargis" and Macaire, its master's murderer. The dog not only showed the spot in the forest of Bondy where its dead master was buried, but singled out the murderer. Pop. about 11.000.

MONTAUBAN (mông-tō-bo*ng*′) (the ancient Mons Albanus), capital of the department of Tarn-et-Garonne, France, has a seminary with the only Protestant faculty of theology in France; raw silk spinning and manufactures of wool, etc. It owes its origin to the abbey of St. Théodard, or Montauriol, 8th century. In the 16th century a stronghold of the Protestants, the inhabitants formed a republic, and the town was ineffectually besieged in 1562 and 1621, but surrendered in 1629. Pop. about 30,000.

MONTAUK (tâk′) **POINT**, the extreme E. point of Long Island, N. Y. On it is a stone lighthouse (visible 19 miles). Here, in 1898, the War Department established Camp Wikoff, for sick, wounded, and convalescent soldiers who had served in Spanish-American War campaign.

MONTBÉLIARD (mông-bā-lyār′) (German Mömpelgard), a town in the French department of Doubs. Carries on manufactures of watch springs, watchmaking tools, and cotton. A possession of the House of Württemberg from 1397, it was a Protestant center from 1525, ceded to France in 1801, and suffered in the Franco-German War. Cuvier was a native; and there is a statue of him, as also of Colonel Denfert, defender of Belfort. Pop. about 10,000.

MONT BLANC (mông blo*ng*), the highest mountain in Europe (if the Caucasus be regarded as Asiatic); 15,782 feet above sea-level; situated in France, close to the Italian frontier, 40 miles S. of the Lake of Geneva. It rises into several sharp peaks (aiguilles) and forms great glaciers—the Glacier du Géant, Mer de Glace, etc. A practicable route to the summit was gained, in June, 1786, by Balmat and Paccard, guides. There is an observatory (1890) at a height of 14,470 feet.

MONTCALM (mông-kälm′), **LOUIS JOSEPH SAINT VÉRAN, MARQUIS DE**, a French general; born near Nîmes, France, Feb. 29, 1712. He distinguished himself in several campaigns in Europe, and in 1756 was appointed to the chief command of the French troops in Canada. Here he took Fort Ontario (Oswego), Fort William Henry (on Lake George), and occupied Ticonderoga (1758); but at Quebec, Sept. 14, 1759, was completely defeated by General Wolfe on the Heights of Abraham, both commanders being mortally wounded.

MONTCEAU-LES-MINES, a town of France in the department of Saone-et-Loire. It is the center of an important coal-mining region and has iron works, machine shops, and textile factories, etc. Pop. about 27,000.

MONT CENIS (mông suh-nē′), or **MONTE CENISIO** (mon′te chā-nē′sē-ō), an Alpine peak and pass between Savoy and Piedmont; height of the mountain, 11,792 feet; of the pass, 6,884 feet. Over the pass a road was constructed (1802-1810), under Napoleon's orders. Thirteen 7½ miles long, was begun in 1857 on the miles W. of the pass a railroad tunnel, Italian side, and in 1863 on the French, finished in 1870 at a cost of $15,000,000.

MONTCLAIR, a town in Essex co., N. J., on the Erie and the Lackawanna railroads; 6 miles N. by W. of Newark. It is situated on the first range of the Orange Mountains, the average elevation being about 300 feet; is principally a residential place, being the home of many pital, military academy, State normal school, art museum, public library, high school, State and savings banks, weekly newspapers, many handsome residences. Pop. (1910) 21,550; (1920) 28,810.

MONT DE PIÉTÉ (mông duh pē-ā-tā′), a public benevolent institution, existing in Italy, France, Spain, etc., and said to have been first established at Perugia in the later half of the 15th century by Father Barnabas of Terni, and to have taken its name from the hill on which it was situated. The object was to deliver the needy from the usurious Jewish money lenders, by lending money at lowest cost on pledges. The mont de piété of Paris advances to the value of about two-thirds of the pledges, charging interest at the rate of 4½ per cent. per annum, besides ¾ per cent. per month for the expenses of the establishment. The *monti frumentarii* are granaries established in different parts of Italy to supply the needy with grain on the same principle as the monts de piété.

In 1894, the Rev. David H. Greer, D.D., rector of St. Bartholomew's Protestant Episcopal Church, New York city, inaugurated a similar system.

MONTDIDIER, a town in northern France. In the World War, during the German drive toward Paris, in August, 1914, Montdidier was occupied and held by the invaders. When Marshal Foch, commander of the Allied forces, began the great offensive movement against the Germans, in the late summer of 1918, General Debeny's French army captured Montdidier on Aug. 10. Pop. about 5,000.

MONT-DORE-LES-BAINS (mông-dor-lā-bang'), a village of Auvergne, France; in the department of Puy-de-Dôme, 3,412 feet above the sea-level, in a picturesque valley, which is bordered by rugged volcanic hills, and closed toward the S. by a semicircle of jagged mountains, the highest point of which, the Pic de Sancy (6,188 feet), is the loftiest mountain in central France. The Mont Dore mineral springs, used by the Romans, are of great value in affections of the throat, most diseases of the respiratory organs, and rheumatism.

MONTEBELLO CASTEGGIO (mon-te-bel'lō kä-ted'jō), a village of northern Italy, where the Austrians were defeated by a French army under General Lannes, June 9, 1800. In May, 1859, the Austrians were again defeated here by the united French and Piedmontese army.

MONTE CARLO (mon'te kär'lō), the casino in MONACO (*q. v.*). The first stone was laid in 1856. The "Association of the Watering-Place and Strangers' Club of Monaco," whose capital is $6,000,000 in 60,000 shares, holds a contract, which was made with the late Prince Charles, and expired in 1913. It has practically to bear the cost of spiritual and temporal government for the principality. The present ruler, Prince Albert, receives from the society an annuity of $350,000 a year. Pop. about 10,000.

MONTECATINI (kä-tē'nē), a watering place of Italy, 30 miles N. W. of Florence. Its mineral springs are saline, and are efficacious for abdominal complaints, scrofula, and dysentery.

MONTE CRISTO (krēs'tō), a small island 6 miles in circumference belonging to Italy, 25 miles of S. of Elba, the seat of a penal colony. Dumas gave the name of the isle to the hero of his most popular romance.

MONTEFIORE, SIR MOSES (mon-te-fē-ō'rē), a Jewish philanthropist, descendant of a wealthy family of bankers; born in Leghorn, Italy, Oct. 24, 1784. In 1812 he married Judith Cohen (1784-1862), a lady who went hand in hand with him in all his many schemes of philanthropy. As a stock-broker he soon achieved great success. In 1818 he was elected president of the Spanish and Portuguese community. From 1829 onward he took a prominent part in the struggle for removing the civil disabilities of English Jews. He was for a time High Sheriff of Kent, and, after long exclusion and repeated re-election, was legally admitted as Sheriff of London in 1837. In that year he was knighted, and in 1846 was raised to a baronetcy. He made seven journeys to the East, the first being in 1827, and the latest in 1875, chiefly for the amelioration of the condition of his countrymen. In memory of his wife he endowed a Jewish college at Ramsgate in 1865. In his 101st year he died in Ramsgate, England, July 28, 1885.

MONTENEGRO (native Tzrnagora, Turkish Karadagh, all meaning Black Mountain), formerly an independent principality of Europe, situated in the W. part of the Balkan Peninsula, and bounded by Albania, the Adriatic, and the former Austrian provinces of Herzegovina and Dalmatia; area, about 3,630 square miles; pop. about 250,000. The surface is everywhere mountainous, being covered by an extension of the Dinaric Alps, rising to the height of 8,850 feet. There are, however, a few beautiful and verdant plains and valleys, in which the soil is tolerably fertile. The principal river is the Moratcha. About half of the Lake of Scutari, besides several smaller lakes, lies within the Montenegrin boundary. The climate is healthy. Forests of beech, pine, chestnut, and other valuable timber cover many of the mountain sides. Fruit trees of all kinds abound, especially in the sheltered valleys, where even almonds, vines, and pomegranates ripen. Agriculture is in a very rude and inefficient state, though every cultivable piece of land is planted with Indian corn, potatoes, tobacco, rye, wheat, cabbages, or some other useful plant. Sheep, cattle, and goats are reared in great numbers. Manufactures, with exception of a coarse woolen stuff, are unknown. The chief occupations of the Montenegrins are agriculture and fishing, trade being altogether left to foreigners. The exports are sheep and cattle, mutton-hams, sumach, honey, hides, cheese, butter, and other agricultural produce. The chief towns are Cettinje, the capital; Podgoritza; Niksich; and the seaports Dulcigno and Antivari. The Montenegrins are pure Serbs and speak a Serbian dialect. They are generally of tall stature and well proportioned. The men go at all times fully armed, whatever be the occupation in which they are engaged, and all between 18 and 50 years of age (estimated at 29,000) are liable to military service. In religion they are of the Greek Church. Education, though once neglected, is free and compulsory. Montenegro was nominally a constitutional monarchy, with a state council of eight members, but the king was practically absolute.

Montenegro, first appearing as a principality under the name of Zeta in the

4th century, was subject to the great Serbian kingdom till about 1389. In 1516 the secular prince abdicated in favor of the Archbishop Vavil, who then formed Montenegro into a theocratic state, under an autocratic vladika or celibate prince-bishop. The dignity was inherited through brothers and nephews, and after 1697 became hereditary in the family of Petrovitch Njegos. The history of Montenegro for many years is a record of deadly struggle with the Turks, and of a slowly growing civilization among its inhabitants. In 1852 Danilo became vladika, but in 1855 he married, threw off his ecclesiastical character, assuming the title of hospodar or prince, and transformed his land into a secular principality, the independence of which was soon recognized by Russia. Danilo was assassinated in 1860, and Nicholas I. was proclaimed his successor, Aug. 14, of that year. In 1861-1862 he engaged in a not altogether successful war against Turkey; but in 1876 he joined Serbia and in 1877-1878 Russia against his hereditary foe, with the results that 1,900 square miles were added to his territory by the Treaty of Berlin; that the port of Antivari and all the waters of Montenegro were closed to the ships of war of all nations; and that the administration of the maritime and sanitary police on the coast was placed in the hands of Austria.

Montenegro suffered severely in the World War. At the first invasion of Serbia by the Austrian armies, Montenegro lost no time in declaring war against the Central Empires. Although the army numbered only about 40,000 men, they were at once placed in the field. A separate army was dispatched by Austria to invade Montenegro and to prevent a junction of the Serbian and Montenegrin armies. This force, however, was repulsed, and from the top of the strongly fortified Mount Lovcen, the Montenegrins carried on the bombardment of Cattaro held by the enemy. On Aug. 10, 1914, the Montenegrin infantry delivered a strong attack against the Austrian garrisons, but they were unable to make good the advantage they first gained. They successfully resisted the Austrians in the second invasion of Serbia and almost succeeded in reaching Sarajevo in Bosnia. With the beginning of the third invasion, however, they were compelled to retire before greatly superior numbers, and Serbia was finally overrun by Austro-German armies. Montenegro was also invaded and for the remainder of the war was in the possession of the Central Powers. King Nicholas fled to Italy and then to France. The government was transferred to Bordeaux. In December, 1918, King Nicholas was deposed by the National Assembly, on account of attempts made previously to bring about peace with Austria. On the creation of the state of Jugoslavia, Montenegro became a part of this kingdom. See JUGOSLAVIA.

MONTENOTTE (mon-te-not'te), a small village of northern Italy, 26 miles W. of Genoa, where Napoleon won his first victory over the Austrians, April 12, 1796.

MONTEPULCIANO (mon-te-pöl-chä'-nō), a town of Italy, a bishop's see, 43 miles S. E. of Siena. The birthplace of Politian and Bellarmine, and is famous for its red wine. Pop. about 16,000.

MONTEREAU (mo*ng*t-rō'), a French town at the confluence of the Seine and Yonne. At the bridge here, in 1419, Jean-sans-Peur, Duke of Burgundy, was assassinated at the instigation and in the presence of the young Dauphin, afterward Charles VII. In the vicinity Napoleon, on Feb. 18, 1814, gained his last victory over the allies.

MONTEREY, a city of California, in Monterey co. It is on Monterey Bay, and on the Southern Pacific railroad, and also on several steamship lines. While it is an important industrial and agricultural community, it is chiefly noted as a residential city. There are fine facilities for bathing, and its climate is mild and equable. The city contains many interesting specimens of Spanish architecture, including the San Carlos and Carmel missions, and the old custom house. Its leading industries are farming, cattle raising, and canning. The city figured largely in the early history of California. A mission was established here by the Spanish in 1770. From 1840 to 1845 it was the capital of the province. In 1847 Monterey became the seat of the military government of California. Pop. (1910) 4,923; (1920) 5,479.

MONTEREY (mon-tā-rā'), a city and capital of the State of Nuevo Leôn, Mexico; is in a fertile plateau-valley, 670 miles N. of Mexico City. It is a well-built town, with a thriving trade. Founded in 1599, it was taken by the American army under General Taylor in 1846. Pop. about 74,000.

MONTE ROSA (mon'te rō'sä), an Alpine Mountain mass with four principal peaks, in the Pennine ridge which separates the Swiss canton of Valais from Italy. The highest peak, the Dufourspitze, 15,217 feet high, was first climbed in 1855.

MONTE SANT' ANGELO (sänt än'-je-lō), a city of southern Italy, 28 miles N. E. of Foggia. It stands 2,790 feet above sea-level, on one of the Gargano hills, and is famed for its exquisite honey. Pop. about 15,000.

MONTE SILVIO. See MATTERHORN.

MONTESPAN, (môn*g*-tuh-spo*ng*'), **FRANÇOISE ATHÉNAIS, MARQUISE DE**, mistress of Louis XIV.; born in 1641. She was the daughter of Gabriel de Rochechouart, Duc de Mortemart, married in 1663 the Marquis de Montespan, and became attached to the household of the queen. Her beauty and wit captivated the heart of the king, and about 1668 she became his mistress, without, however, as yet supplanting La Vallière. Montespan reigned till 1682, and bore the king eight children, which were legitimized, but at last her influence paled before the rising star of Madame de Maintenon, governess to her children. In 1687 she left the court, in 1691 Paris itself and died in Bourbon-l'Archambault, May 27, 1707.

MONTESQUIEU (môn*g*-tuh-skyuh'), **CHARLES DE SECONDAT, BARON DE**, a famous French writer; born in the castle of La Brède, near Bordeaux, France, Jan. 18, 1689. In 1716 he became president of the Parliament of Bordeaux. The publication of the "Persian Letters" first made him famous as an author. In 1728 he was admitted to the French Academy. Having given up his civil employment he began to travel through Europe, to collect materials for his long meditated work on politics and jurisprudence. "On the Causes of the Grandeur and Declension of the Romans," published in 1734. His greatest work, is the "Spirit of Laws," which occupied him 20 years, and was published in 1748. His other works are, the "Temple of Gnide," "Lysimachus," and an "Essay on Taste." He died in Paris, Feb. 10, 1755.

MONTESSORI, MARIA, an Italian doctor and educator; born in 1870, she received the degree of doctor of medicine when she was twenty-four years old, being the first woman in Italy to secure that degree. By her work as a doctor among feeble-minded children she became interested in the subject of their education. Her success in this field turned her attention to the education of normal children. In 1907 the House of Childhood was founded under her direction, and since that time others have followed.

MONTESSORI SYSTEM, a method of instruction used by Dr. Maria Montessori and, as yet, used only in the branches of elementary education and with children between the ages of 3 and 10 years. It is largely the development of the ideas of Froebel, and more especially of Séguin and Itard. The chief principle is that of "self-education"—allowing the child to learn ideas by its own activity and by following its own inclinations and not by being dictated to or disciplined by the teacher. In the Montessori system there are no classes, no lessons. There are no rewards or punishment, the only incentive used is the desire on the child's part to do things well in which he or she is interested. When the child enters the school he sees groups of children playing games and joins the group which is doing the things he likes best. The games are ones involving the senses of touch, sight, and hearing, and are so arranged and conducted that these senses are soon developed without the child being conscious of learning a task. "Touch," for example, is practiced by playing games blindfolded, hearing by playing games in the dark. The interest and attention of the child never wavers as in the conventional school system, since he is always doing what he likes. Writing comes before reading in the Montessori system and is learned by means of playing with letters, and imitating their shape. It usually takes a child of four years about two months to learn to write. "Reading" is learned by the application of similar methods. The rôle of the teacher in all this work is radically different from that under the old system. The material itself does the teaching, for it contains the control of errors. The teacher does not impart information; she is a "passive force, a silent presence."

MONTEVIDEO (mōn-tā-vē-*th*ā'ō), capital of Uruguay, on a small peninsula on the N. coast of the estuary of the La Plata, 130 miles E. S. E. of Buenos Ayres. It is one of the best built towns in South America. The chief exports are wool, hides, tallow, dried beef, and extracts of flesh. Montevideo sends out above half the whole exports of Uruguay, and receives all but a small fraction of the imports. Pop. (1918) 378,993.

MONTEZ, LOLA, the stage name of MARIE DOLORES ELIZA ROSANNA GILBERT, an Irish adventuress; born in Limerick, Ireland, in 1818. Her father was an Ensign Gilbert, her mother of Spanish descent. Taken out to India, she lost her father, and, her mother having remarried, "Lola" was sent home in 1826 to Europe, and brought up at Montrose, in Paris, and at Bath. To escape the match,

arranged by her mother, with an old judge, she eloped with a Captain James, whom in July, 1837, she married, but the marriage ended in a separation. She appeared as a dancer in London and other European capitals. In 1846, at Munich, she captivated the eccentric King Louis I., who created her Countess of Landsfeld, and allowed her $25,000 a year. For more than a year she was all-powerful, her power directed in favor of Liberalism and against the Jesuits; but the revolution of 1848 sent her once more adrift. Again she married (this time a Lieutenant Heald), a marriage as unlucky as the first. She died, a penitent, in Astoria, L. I., on Jan. 17, 1861.

MONTEZUMA (mon-tē-zō'mä) **II.**, surnamed XOCOJOTZIN, or "THE YOUNGER," 9th King of Mexico; born about 1476. He was elected on the death of his grandfather, in 1502. He had distinguished himself as a general, and at the time of his election held the office of high priest. He dropped the mask of moderation and humility, was crowned with more than usual pomp. He dismissed from his court and palace all plebeians, and gave their employments to persons of noble birth, alienating the affections of his subjects. He carried on almost continual wars with the neighboring provinces. In 1519, Cortez and the Spaniards invaded the empire and approached the capital. Montezuma sent presents and complimentary messages to them, but was in the utmost terror. He at length went with a magnificent cortege to meet Cortez, and conducted him into the city, where, after eight days of ceremonious civilities, Cortez made Montezuma his prisoner, and had irons put on his legs. They were, however, soon removed, and he professed himself the vassal of Charles V. He remained inflexible in the matter of religion. Left by Cortez, in 1520, in charge of Alvarado, and a small body of Spaniards, severe conflicts took place in the city, which were renewed on the return of Cortez. The Mexicans assaulted the city and Montezuma, while standing on the walls, exhorting his subjects to submit, was wounded by Mexican arrows, and by the blow of a stone, before the Spaniards could save him. He refused all food and attendance to his wounds, and died June 30, 1520.

MONTFERRAT (mông-fer-rä'), formerly an independent duchy of Italy, between Piedmont, Milan, and Genoa, now forming part of the kingdom of Italy. It consisted of two separate portions, both lying between the Maritime Alps and the Po. The capital was Casale. After the downfall of the Frankish empire, Montferrat was ruled by its own marquises till the beginning of the 14th century. This house sent its most illus-



MONTEZUMA

trous sons to take part in the Crusades, especially Conrad, the defender of Tyre against Saladin, and Boniface, ruler of Thessalia. Iolande or Irene, sister and heiress of the last male of the house,

was Empress of Constantinople. In 1631 the Dukes of Savoy obtained a portion of Montferrat, and in 1703 the remaining portion.

MONTFORT, SIMON DE, an English general and statesman, born about 1208. He quitted France for England in 1231 or 1236, where the estates to which he was heir were taken possession of with the title Earl of Leicester. Henry III. permitted him to marry his sister, the Countess dowager of Pembroke, and appointed him lieutenant-general, or seneschal of Gascony. From this time the interest of English history turns on the disputes between this turbulent subject at the head of a confederacy of the barons and the crown, the first incident in it being Montfort's recall from his government. In 1258 Henry had convoked a Parliament, to procure supplies for the conquest of Sicily. Montfort and the barons made an armed protest against his government, the end of which was the appointment of 24 of their number, with Montfort as president, to administer the affairs of the kingdom. The king and his son, Prince Edward, endeavoring to reconquer the royal authority by force of arms, were defeated at the battle of Lewes, 1264. In 1265, De Montfort convened a Parliament, in which representatives were sent from the boroughs for the first time on record and thus originated the House of Commons. He was now the leader of the popular party, and was obliged to take the field by the disaffection of the Earl of Gloucester who, with many other of the barons, joined Prince Edward. The battle of Evesham, Aug. 4, 1265, decided the contest. Simon de Montfort, overpowered by numbers, fell and the ruin of his family succeeded.

MONTGOLFIER (môn*g*-gol-fyā'), **JOSEPH MICHEL** (1740-1810) and **JACQUES ÉTIENNE** (1745-1799), joint-inventors of the balloon, were born in Vidalon-lès-Annonay, in the department of Ardèche, in France. Their first balloon, inflated with rarefied atmospheric air, ascended from Annonay in 1782. Joseph was also the inventor of the water-ram.

MONTGOMERY, a city, county-seat of Montgomery co., and capital of the State of Alabama; on the Alabama river, and on the Louisvlle and Nashville, the Western of Alabama, the Plant System, the Central of Georgia, the Mobile and Ohio and the Seaboard Air Line railroads; 95 miles S. E. of Birmingham. Here are the United States Government Building, Masonic Temple, city infirmary, an orphanage, large cotton storage warehouses, electric lights, electric street railways, National banks, and several daily and weekly newspapers. It has manufactories of ice, fertilizers, candy, wagons, carriages, cigars, vinegar, soap, crackers, paper boxes, etc.; large interests in cotton oil machinery, marble, etc.; and an assessed property valuation of nearly $30,000,000. The opening of the Panama Canal gave a great impetus to the commercial interests of Montgomery, and it is now one of the most important industrial cities of the South. Montgomery was founded in 1817, and named in honor of General Montgomery, who was killed in the action at Quebec. It received its charter in 1837, and was made the State capital in 1847. It was also the capital of the Confederate States in 1861-1862. Pop. (1910) 38,136; (1920) 43,464.

MONTGOMERY, the name of a noble family, sprung from ROGER DE MONTGOMERY, a companion-in-arms of William the Conqueror. The son of Roger was banished the kingdom in the reign of Henry I., and one of his descendants was created Earl of Eglinton by James IV. of Scotland, 1502. GABRIEL DE MONTGOMERY, a member of this family, had the misfortune to wound Henry II. in a tournament, of which the king died, 1559. He afterward distinguished himself in the religious wars of France, and was beheaded by order of Catherine de Medici, in 1574.

MONTGOMERY, JOHN KNOX, clergyman; born at Belfast, Tenn., in 1861, attended Enfield College, Ill., and Indiana State University, graduating from the latter in 1884, and from Xenia Theological Seminary, O., with the degree of B. D. in 1887. In the same year he was ordained and became pastor, first at Harshaville, O., then in turn at Sparta, Ill., Cincinnati, O., Chicago, and Charlotte, N. C. Has been president of Muskingum College since June, 1904. In 1900 he was Prohibitionist candidate for secretary of state of Ohio, and from 1914 has been president of the Ohio Anti-Saloon League. Has been editor of religious papers in Pittsburgh and Philadelphia. Was preacher in army camps under National War Work Council.

MONTGOMERY, RICHARD, an American military officer; born in Swords, Ireland, Dec. 2, 1736. He entered the army of Great Britain and was with Wolfe at the taking of Quebec in 1759. On his return to England he resigned his commission and emigrated to America. When the Revolutionary War began he was given command of the

northern Continental forces. He reduced Fort Cherokee, took Montreal and fell Dec. 31, 1775, in attack on Quebec. A monument was erected to his memory in front of St. Paul's Church, New York City.

MONTGOMERYSHIRE, a county of north Wales situated between Shropshire on the E. and Merioneth and Cardigan on the W. It has a total area of about 800 square miles, of which the larger part is mountainous. In the valleys are grown considerable quantities of wheat, oats, and barley. There are important mines in the county from which copper, lead, and zinc are obtained. There are also slate and limestone quarries. On the higher lands there is a large amount of pasturage, and cattle and sheep raising are important industries. The principal streams in the county are the Severn and Wye. The capital of the county is Montgomery, but the county business is chiefly carried on at Welshpool and Newton. Pop. about 53,000.

MONTH, in astronomy, properly the time in which the moon makes one complete revolution round the earth, or appears to return to precisely the same point in the heavens from which it started. This may be from change to change, from full moon to full moon, or in an indefinite number of other ways. The time of the revolution now described is properly 29 days, 12 hours, 44 minutes, and 3 seconds. Twelve periods, called lunar months, fall short of a year by about 11 days. Lunar months were used by the ancient Jews, as they still are by their modern successors and by the Mohammedans. Also a solar month; the period for the passage of the sun through one of the signs of the zodiac. Twelve of these periods constitute a year.

In law, formerly the word month in a statute meant a lunar month, but it was made to signify calendar months unless otherwise expressly designated. Anomalistic month, the time taken by the moon in passing from one perigee to the next, viz., 27 days, 13 hours, 18 minutes, and 37.4 seconds. Nodical month, the time taken by the moon in revolving from one node to the same node again, viz., 27 days, 5 hours, 5 minutes, and 36 seconds. Sacred month: suggested at Chartist Convention, London, 1838, during which the working classes were to abstain from labor to compel the government to concede the Charter.

Sidereal month, the time taken by the moon in passing from one star to the same star again, viz., 27 days, 7 hours, 43 minutes, 11.5 seconds. Tropical or periodic month, the time taken by the moon in passing from any point of the ecliptic to the same point again, viz., 27 days, 7 hours, 43 minutes, 4.7 seconds.

MONTICELLO, the former residence of Thomas Jefferson, in Albemarle co., Va., near Charlottesville. The great statesman is buried in a small private graveyard adjoining the road leading to the house.

MONTMARTRE (mô*ng*-märtr'), formerly a village of France, department of Seine, now a part of Paris, on a conical hill, a center for literary and artistic Bohemians. The name is derived by some from Mons Martis, the site of a temple to Mars; and by others from Mons Martyrum, because it was the scene of the martyrdom of St. Denis and his three companions. The Northmen pillaged it in 887, and Louis VI., "the Fat" (1108-1137), formed a Benedictine abbey. Combats between the allied armies and the French took place on the heights, of which Blücher gained possession, March 30, 1814.

MONTMORENCY, a river of Quebec, a tributary of the St. Lawrence, famous for its beautiful falls, 8 miles N. E. of Quebec. Here the stream is 100 feet wide, and the falls have a sheer descent of 250 feet.

MONTMORENCY (mô*ng*-mō-ro*ng*-sē), the name of one of the oldest and most illustrious of French families, the founder of which was BOUCHARD, one of the great feudatories of the 10th century. Of its members are: MATHIEU, grand constable 1130, regent during the crusade 1147, died in 1160. MATHIEU, grandson of the latter, called the "Great Constable," served in the crusade against the Albigenses, died in 1230. CHARLES, Marshal of France, and Governor of Normandy, died in 1381. ANNE, Constable of France, born in 1493, companion-in-arms and in captivity of Francis I., 1525-1526, gained the battle of Dreux against the Calvinists, 1562, and that of St. Denis, where he fell in 1567. HENRI I., second son of Anne, born 1544, fought with his father, and was created Marshal of France in Piedmont, 1566. Henry IV. made him constable, 1593; died in 1614. HENRI II., son of the latter, born in 1595, was named admiral by Louis XII., and distinguished himself against the Calvinists. He was beheaded, after opposing Richelieu, in 1632. His sister, CHARLOTTE MARGUERITE, became wife of the second Henri, Prince de Condé, and mother of the great Condé; died in 1650.

MONTPELIER, a city, county-seat of Washington co., and capital of the State

of Vermont, on the Winooski river, and on the Wells River, the Central Vermont, and the Montpelier and Wells River railroads; 40 miles S. E. of Burlington. It has waterworks, electric light and street railway plants, National banks, art galleries, libraries, and many other important public buildings, and daily newspapers. It has industries in granite, hardware, saddlery, cotton goods, and sawmill machinery, and an assessed valuation of $5,000,000. Montpelier was made the State capital in 1805, and received its charter as a city in 1894. Pop. (1910) 7,856; (1920) 7,125.

MONTPELLIER (môn*g*-pel-lyā'), chief town of the department of Hérault, in France; on the Lez; 80 miles W. N. W. of Marseilles. It is one of the handsomest towns of the S. of France. Among its noteworthy features are the Peyrou, a splendid promenade, on which is the so-called Château d'Eau, at the termination of a noble aqueduct; the citadel; the cathedral; the Palais de Justice and the Porte de Peyrou. Montpellier since the 12th century has been famous for its school of medicine, founded by Arab physicians driven out of Spain. Pop. about 80,000.

MONTPELLIER, UNIVERSITY OF, a university of France. In the 12th century a medical college was established which had a higher reputation than any other in Europe except Salerno, and even in modern times medicine has continued to be its chief faculty. A university of law was added in 1160 and the study of Roman law, then just beginning in Europe, was first conducted by an Italian, Placentinus. In the 13th century a university of theology was founded at Montpellier by the Carthusian order of friars. The golden age of the university was in this century, although its medical faculty remained famous until modern times. The university was reorganized by Napoleon I. The library contains 100,000 volumes. In 1913 its enrollment numbered 1,958 students.

MONTPENSIER, ANTOINE MARIE PHILIPPE LOUIS D'ORLÉANS, DUC DE, 5th son of Louis Philippe, king of the French; born in Paris, July 31, 1824. He was educated at the college of Henry IV., and was appointed lieutenant of artillery in 1842. Montpensier was sent to Algeria in 1844, participated in the expedition against Biskara, and was wounded during the campaign of Ziban. His services were rewarded with the cross of the Legion of Honor, and promotion to the rank of chef d'escadron. After visiting England in 1845, the duke rejoined the army in Africa, and distinguished himself against the Kabyles. He married, at Madrid, in 1846, the Infanta Maria Louisa, sister of Queen Isabella II. of Spain. After the revolution of 1848, the duke finally settled in Seville, Spain. Montpensier, after receiving the title of Infant of Spain, was made captain-general of the Spanish army in 1859. His eldest daughter, Princess Maria, was married in 1864 to her cousin, the Count of Paris, heir-male of the royal house of Orleans. After the flight of Isabella II. from Spain in 1868, the duke was proposed as a candidate for the crown. In 1878 his third daughter, Mercedes, became the wife of King Alfonso XII. of Spain. Montpensier died near Seville, Spain, Feb. 4, 1890.

MONTREAL, the metropolitan city of Canada; on an island of the same name, in the Province of Quebec, at the head of ocean navigation on the St. Lawrence river; 160 miles N. of Quebec. The city, originally called Ville Marie, derives its present name from Mount Royal, which rises abruptly to a height (at the Observatory) of 735 feet above low water in the river which runs at its base, and upon the lower slopes and terraces of which a large section of the city is built. The St. Lawrence in front of Montreal averages about 2 miles in width and is crossed at the narrowest point by the Victoria Jubilee Bridge 1⅞ miles in length and 60 feet high in the middle. The river is also crossed by the Lachine bridge of the Canadian Pacific Railway near the city. A fine natural harbor for ocean-going ships has been greatly improved by extensive dredging and gigantic works and improving the wharfage accommodations. The ship channel between Montreal and Quebec has been dredged to a depth of 27 feet at an expense of about $5,500,000. Montreal is the terminus of ocean navigation by the Lachine Rapids about 7 miles above the city, which are navigable downward only by small steamers. These rapids are overcome for inland navigation by the Lachine canal 8¼ miles in length, with a rise of 45 feet, the first of the extensive system of St. Lawrence canals.

Municipal Improvements.—The topography of Montreal has facilitated the construction of a fine system of waterworks deficient only in the matter of filtration; the main reservoir with a capacity of 36,500,000 gallons being situated 200 feet above the level of the river and a higher level reservoir 210 feet higher affording a high pressure service available for fire protection to the highest buildings in the city. The supply is obtained from the Ottawa river. The

season of navigation extends from May till November.

Noteworthy Buildings.—The twin towers of the Roman Catholic Church of Notre Dame, the parish church of Montreal, built 1824-1829, constitute the most characteristic landmark of Montreal. The towers are 227 feet high, and one of them contains the largest bell on the continent, the "Gros Bourdon." The church is one of the largest in North America, and will hold 15,000 people. The Roman Catholic Cathedral of St. James, commenced in 1868, is modelled after St. Peter's at Rome. There are about 100 churches in Montreal, the oldest being Notre Dame de Bonsecours (1771). Christ Church Cathedral (Anglican) is an exquisite example of English church architecture of the Gothic style. Other fine churches are Notre Dame de Lourdes, the Church of the Gesu, and St. James, Methodist. The oldest structures in Montreal are two old towers in front of the Grand Seminary, built in 1694 for protection against the Indians. Among the more noteworthy modern buildings are the Royal Victoria Hospital; the Bank of Montreal; the general offices of the Grand Trunk Railway; the Windsor Street and Place Viger stations of the Canadian Pacific Railway; the McGill and Laval University buildings.

Monuments. — The best statues are those of Queen Victoria, in Victoria Square; of Maisonneuve, in Place d'Armes Square. Perhaps the most interesting monument is that of Lord Nelson, near the City Hall, erected in 1809.

Business. — In 1918 the imports were valued at $197,162,520, and exports $524,365,342. Montreal is an important banking center, the oldest and largest bank being the Bank of Montreal, founded in 1817, and since then developed into one of the most important banking institutions of the world. In 1919 the bank clearings were over $6,200,000,000. In the same year the assessed valuation was over $850,000,000.

Education.—As a seat of learning Montreal occupies a high place. Chief among its educational institutions are McGILL UNIVERSITY (*q. v.*); a branch of Laval University, Quebec; the medical faculty of Bishop's College University, Lennoxville; the Seminary of St. Sulpice; St. Mary's College (Jesuit); and the Ville Marie, Sacred Heart, and Hochelaga Convents. The public schools of Montreal are controlled by boards of Roman Catholic and Protestant School Commissioners respectively.

History.—Ville Marie, afterward called Montreal, was founded by Maisonneuve, May 18, 1642, during the French régime in Canada. The site had previously been visited in 1535 by Jacques Cartier, who founded there a large Indian town called Hochelaga; and in 1603 by Champlain, when it was found that the Indian town had completely disappeared. The early French settlers had much trouble with the Indians, culminating August, 1689, in the massacre at Lachine, 9 miles from Montreal, of 200 settlers and the capture of 200 more by a band of 1,500 Iroquois Indians. On Sept. 8, 1760, Montreal capitulated to General Amherst and the surrender of the city completed the conquest of New France by the English. In 1775 Montreal was captured by the Americans, who sent expeditions under Montgomery and Arnold to capture Quebec and Montreal; and General Carleton in command of the British forces at Montreal had to retreat to Quebec, where the Americans were ultimately defeated. In 1775 the American General Wooster made his headquarters in the Château de Ramergay, which still stands opposite the city hall and which was the official residence of the British governors after the conquest. In this same château, the Commissioners of Congress, Benjamin Franklin, Samuel Chase, and Charles Carroll, in 1776 met and held council under Gen. Benedict Arnold. In 1776 the American forces retreated. Montreal obtained its first city charter in 1833, the first mayor being Jacques Viger. In 1844 the city became the capital of the province of Canada formed in 1841, by the union of the provinces of Upper and Lower Canada, but Parliament met for the last time in Montreal in 1849; when a mob of English-speaking citizens, enraged at the passing of the "Rebellion Losses Bill," burned down the Parliament Buildings and pelted the Governor-General, Lord Elgin. The fire (which destroyed valuable public records, the parliamentary library, and in fact everything appertaining to Parliament but the mace and the portrait of Queen Victoria) terminated Montreal's brief career as the seat of government. Pop. about 700,000.

MONTREAL, an island of Canada, in the St. Lawrence river, at the confluence of Ottawa river, 32 miles long and 10½ broad, containing the city of Montreal.

MONTREUX (mông-truh'), a group of villages on the N. shore of the Lake of Geneva. The name properly belongs to one small hamlet, but is popularly extended so as to include the adjoining villages of Clarens, Vernex, Veytaux, etc. Near it is the castle of Chillon.

MONTROSE, a seaport of Forfarshire, Scotland, 76 miles N. N. E. of

Edinburgh and 42 S. S. W. of Aberdeen, on a level peninsula between Montrose Basin and the mouth of the river South Esk. A fine suspension bridge (1829), 432 feet long, leads to Inchbrayock or Rossie Island, in the Esk's channel, and is continued thence by a drawbridge. The foreign trade (timber its staple), is chiefly with the Baltic and Canada; and the average tonnage of ships entering the port exceeds 90,000 tons per annum. Flax spinning is the principal industry; and ropes, canvas, soap, etc., are also manufactured. It has memories of Edward I., the two Melvilles, the Great Marquis, the Old Pretender, Dr. Johnson, and Lola Montez. Pop. about 13,000.

MONTROSE, JAMES GRAHAM, MARQUIS OF, a Scotch noble, and a distinguished royalist leader under Charles I., known, in English history, as the "Great Marquis"; born in Edinburgh, Scotland, in 1613. He took an active part on the side of the king, was created a marquis, and in a few months gained the battles of Perth, Aberdeen, and Inverlochy. In 1645 his fortune changed; and after suffering a defeat from Lesley, at Philiphaugh, near Selkirk, he was obliged to leave the kingdom; in 1648 he landed in Orkney with a few followers, but was soon overpowered, conveyed to Edinburgh, and there decapitated and quartered May 21, 1650.

MONTSERRAT (mont-se-rat') (Latin Mons Serratus, so named from its saw-like outline), a mountain of Catalonia, in N. E. Spain, 30 miles N. W. of Barcelona. Its height is 4,055 feet. The mountain owes its celebrity to the Benedictine abbey built halfway up it, with its wonder-working image of the Virgin, and to the 13 hermitages formerly perched like eagles' nests on almost inaccessible pinnacles. In 1811 the French, under Suchet, plundered the abbey, burned the library, shot the hermits, and hanged the monks. The place in 1827 became the stronghold of the Carlist insurrection.

MONTSERRAT, one of the Lesser Antilles, belonging to Great Britain; 27 miles S. W. of Antigua; length about 11 miles, breadth 7 miles; area 32 square miles; pop. about 12,000. The surface is very mountainous and heavily timbered. Sugar and limes and lime juice are the principal products. The island, ruled by a president and a legislative council, is the healthiest in the West Indies. The island was discovered in 1493, and colonized by the British in 1632. It has remained in their hands ever since, except for two short intervals (1664-1668 and 1782-1784), when it was in the possession of France. Chief town, Plymouth.

MONT ST. ELOI, Flanders, Belgium. Scene of action between British and Germans, Mar. 12, 1915. The Germans blew up part of the height and in a dashing advance overwhelmed the British trenches around it, and won a considerable stretch of defenses. At 9 p. m. the British organized a counter-attack which was carried out by two companies of the Royal Irish, the Leinster Regiment, and the 4th Rifles in support, commanded by Colonel Prowse. The British fought until daybreak, winning some trenches, but leaving the Germans in possession of the Mont and front trenches. Their losses were 40 officers and 680 men killed, wounded, and missing.

MONT ST. MICHEL (*mông sang* mē-shel'), a steep, fortified, isolated rock, in Mont St. Michel Bay, off the coast of the department of Manche, France. On its summit is an irregular town, with an abbey and a church dating from the 11th century. Its ancient castle, formerly a prison, has been restored. Its solid ramparts date from the 13th, 14th, and 15th centuries; in 1880 it was connected by a dyke with the mainland. The whole bay, 15 miles wide at the mouth, 8 miles N. to S., is nearly dry at low water.

MONTT, JORGE, former President of Chile; born in 1846. Trained in the navy, he led the fleet under his command to the support of Congress when a break came between it and President Balmaceda at the end of 1890, carrying its members to Iquique, where a new government was created. When in the hostilities which ensued President Balmaceda and his army were defeated in the vicinity of Valparaiso, Señor Montt was chosen as the new president. His régime showed his sincerity as an adherent of constitutional government, and after initiating numerous reforms, including the establishment of the currency on a gold basis and the extension of the powers of local councils, he gave way in 1896 to Señor F. Errazuriz, who had been elected as his presidential successor.

MONTT, PEDRO, President of Chile, born in 1846. When 26 he was elected deputy, and continued to hold his seat in the Chamber till after 1900, acting sometimes as speaker, and occasionally with a seat in the Cabinet. In 1886 he was Minister of Justice and Public Instruction, and after that Minister of Industry. Following the deposition of President Balmaceda he was sent to Washington to represent Chile, and on his return became Minister of the Interior. In 1906,

after a previous unsuccessful candidacy, he was elected President. He reorganized the finances of the country, remodeled the army and navy, extended railroads, improved the educational system, and gave his support to the principle of arbitration in international disputes. He died in Bremen, Germany, in 1910, whither he had gone for medical treatment.

MONUMENT PARK, situated N. of Colorado Springs in El Paso co., Col. Though small in extent, the park has many claims of interest, because of the natural stone columns rising 15 to 25 feet from the ground. They are composed of sandstone and are capped by a firm ferruginous sandstone which joins the pillars in pairs and groups. The effects of the weather and erosions of time have given some of the columns a rough resemblance to fantastic figures of human shape, some striking and grotesque.

MONVEL, LOUIS MAURICE BOUTEL, a French illustrator, portrait and genre painter; born at Orleans in 1850. Studied at the Beaux Arts and with Carolus Duran after the Franco-Prussian War. In 1875 he first exhibited portraits which won several medals, notably a gold medal at the Paris Exposition of 1890. After this he devoted himself largely to illustrating, winning a world-wide fame. He was especially successful in depicting child life. He made six canvases on the subject of the life of Joan of Arc for the church at Domremy which were exhibited throughout the United States. Another series on the same subject were painted for Senator W. A. Clark. He was working on illustrations for a Life of St. Francis of Assisi when he died in 1913.

MONZA (mōn'zä) (ancient Modœtia), a town of Italy, on the river Lambro, 9 miles N. N. E. of Milan; it has an interesting town hall (1293), a royal palace (1777), and manufactures of cottons, hats, leather, etc. The ancient capital of the Lombard sovereigns owed much to Theodelinda; and in the Middle Ages, in spite of 32 sieges, it was conspicuous for its cloth trade. The cathedral, founded in 595 by Theodelinda, contains many interesting relics of this great queen. The famous Iron Crown, removed to Vienna in 1859, was restored in 1866. Pop. about 53,000.

MOODY, DWIGHT LYMAN, an American evangelist; born in Northfield, Mass., Feb. 5, 1837; received a common school education; united with the Mount Vernon Congregational Church in Boston in 1850; settled in Chicago, Ill., in 1856, and there built up a mission Sunday-school with more than 1,000 pupils. He subsequently built a church in Chicago, which was destroyed in the great fire in 1871. In 1873 he began, with Ira D. Sankey, the evangelistic work which soon made him famous. He met with unparalleled success both in the United States and Great Britain. In 1879 he founded a school for poor girls at Northfield, Mass., which later grew into the celebrated Northfield and Mount Hermon institutions. His publications include "The Second Coming of Christ" (1877); "The Way to God, and How to Find It" (1884); etc. He died in Northfield, Mass., Dec. 22, 1899.

MOODY, WILLIAM H., an American statesman; born in Newbury, Mass., Dec. 23, 1853; was graduated from Harvard in 1876; was district attorney for the eastern district of Massachusetts, 1890-1895; was a member of Congress 1895-1902; when he was appointed by President Roosevelt to succeed John D. Long as Secretary of the Navy. He held this post until 1904, when he was made Attorney-General, and in 1906 was appointed an Associate Justice of the United States Supreme Court. He died in 1917.

MOODY, WILLIAM VAUGHAN, dramatist and poet; born Spencer, Ind., in 1869, he studied at Harvard, and was instructor in English there for a couple of years, leaving in 1895 to teach English and rhetoric at the University of Chicago. His first published work was "The Mask of Judgment," which appeared in 1900, while he was still instructor at Chicago. In the following year he brought out "Poems," and in 1904 "The Fire-Bringer." These works attracted immediate attention by their original note. Three years passed before the appearance of his next work and the interval was well employed, for "The Great Divide" which appeared in 1907 ranks high among American plays. In the same year appeared a "History of English Literature," in which he had collaborated with R. R. Lovett, and a year before his death appeared "The Faith-Healer," a drama of a merit almost equal to that of its predecessor. Died in 1910.

MOODY BIBLE INSTITUTE OF CHICAGO, a school founded by the famous evangelist Dwight L. Moody in 1886 for the purpose of training students in the knowledge of the Bible, and in the practice of Bible teaching and missionary work. As it is not an endowed institu-

tion but is supported by gifts from Protestant evangelical churches, the college students spend part of their time in remunerative work to enable them to pay the tuition fees and support themselves. The enrollment in 1914 for the day and evening classes was 1,266, while 1,567 were taking correspondence courses. The institute has trained over 700 students for the foreign mission field.

MOON, the single satellite attendant on the earth. Its diameter is 2,160 miles, that of the earth (which is 7,918) being nearly four times as great. Its superficial extent is about a 13th part of the earth's surface; its bulk is 1-45 that of the earth, but as the earth is relatively heavier, its weight is about 80 times that of the moon. As the moon revolves around the earth it manifests phases. After absence for a few nights it reappears as a delicate crescent of white light in the W. sky after sunset. Night after night it moves farther to the E., the illuminated portion of its disk continually increasing till the moon becomes full and rises about sunset. When the light of the moon has again so diminished that it is in its last quarter, it is seen high in the heavens in the morning. When it becomes full, the sun and the earth are so nearly in a straight line that the moon narrowly escapes being eclipsed; when new moon is again reached, the sun is nearly undergoing similar obscuration (see ECLIPSE). The moon shines only by the light of the sun reflected from its surface. To equal the brilliance of the sun 600,000 full moons would be required. The moon appears at all times nearly of the same size, showing that its orbit cannot be far from circular. Its average distance is 240,000 miles, varying at times between 220,000 and 260,000, but the ordinary fluctuations do not exceed 13,000 miles on either side of the mean value. The moon performs a complete revolution around the earth in 27 days, 7 hrs., 23 min., and 11.461 secs. This is called its sidereal period. The lunar month is longer than the sidereal period by 2 days, 5 hrs., 51.41 secs., because of the advance of the earth in the orbit between two successive conjunctions of the moon. As the moon revolves on its own axis nearly in the same time as it completes its orbit round the earth, it presents to us at all times nearly the same side of its surface. No clouds appear on it; apparently there is no water to send them forth or an atmosphere in which they may float. The whole surface is studded with volcanoes, apparently extinct. Their craters are broad, beyond anything existent on the earth. Tycho is 50 miles across, so is Aristotle, Theophilus is 64, and Petavius 78. Some are 16,000 and 17,000 feet deep. From the absence of an atmosphere the moon must be uninhabitable by any life analogous to that with which we are acquainted.

MOON, MOUNTAINS OF THE, a high chain of mountains supposed to cross the continent of Africa from E. to W. On the earlier charts they were placed behind the fertile regions which line the S. side of the Mediterranean, separating them from the Great Desert; but the location of the mountains has been gradually changed by geographers southward.

MOONSHINER, a term applied in the Southern and Western States to makers of illicit whisky.

MOONWORT (*Botrychium lunaria*), an interesting fern, native of Great Britain, and widely distributed over northern Europe, penetrating to Arctic regions and Asia, the few other species of which the family is composed appearing also in North America. The plant consists of a root-stock bearing a single erect stem from three to six inches high. A single pinnate leaf springs from the stem about midway, the segments half-moon shaped, pale green, and thick. The fructification is developed on a branched spike, pyramidal in outline, from one to two inches long. The largest growing species, named the rattlesnake fern, abounds in places frequented by that reptile.

MOOR, a native of the N. coast of Africa, which formed the ancient Mauritania, now represented by the countries of Morocco, Algeria, Tunis, and Tripoli. In 709 the Arabs conquered Mauritania, and converted the people to Mohammedanism. The conquerors and the conquered amalgamated together, and in 711 an army of this mixed population, under Arab leaders, crossed at the Straits of Gibraltar, and began the conquest of the Spanish peninsula. This they speedily effected, with the exception of the mountainous districts of Asturias and Galicia. When almost the whole of the rest of Europe was sunk in ignorance and barbarism, learning and the arts flourished among the Moors in Spain. About the middle of the 11th century, many of the local governors established themselves as independent potentates. The wars that followed so weakened the power of the Moors that the Christians rose against them under Alfonso, "the battler," and took Castile, with its capital, Toledo. Their progress was for a time checked; but subsequently they continued to extend their conquests till the

power of the Moors was restricted to the kingdom of Granada, and in 1238 the king of that territory became the vassal of Ferdinand III., King of Castile. At length, in 1491, Ferdinand V., King of Castile and Aragon, after a 10 years' war, conquered this also, and put an end to the dominion of the Moors in Spain, after it had lasted nearly 800 years. A portion of the Moors then returned to Africa; but most of them remained in Spain, where they became peaceful and industrious subjects, and adopted generally the external forms of Christianity. Philip II., however, in his hot zeal for Catholicism, resolved on their entire destruction, and by his oppressions and cruelties, drove them into insurrection, in Granada (1571), after the suppression of which, over 100,000 of them were banished.

MOORE, FORT, an ancient defensive work near Sand Bar Ferry on the Savannah river, Ga.

MOORE, EDWARD CALDWELL, American theologian; born in West Chester, Pa., 1857; studied in Germany. Ordained Presbyterian minister in 1884, serving in Yonkers, N. Y. (1886-1889), and Providence, R. I. (1889-1901). Became Parkman professor of theology and Plummer professor of Christian morals at Harvard in 1901. He has lectured in most of the big universities in this country and England, and is now President of American Board of Commissioners of Foreign Missions.

MOORE, GEORGE, an English author; born in 1853. Among his novels are: "A Modern Lover" (1883); "A Mummer's Wife" (6th ed. 1885); "A Drama in Muslin" (1886); "Confessions of a Young Man" (1888); "Esther Waters" (1894); etc. He wrote also in verse: "Flowers of Passion" (1877); "Pagan Poems" (1881); and the volumes of essays "Impressions and Opinions" (1891); "Modern Painting" (1893); "The Untilled Field" (1903); "Hail and Farewell" (1911-1914); "The Brook Kerith" (1916).

MOORE, GEORGE THOMAS, American botanist; born in Indianapolis, 1871; graduated from Harvard, 1895. Had charge of botany department at Dartmouth College, 1899-1891; physiologist and algologist in Bureau of Plant Industry, U. S. Department of Agriculture, 1903-1905, professor of plant physiology at Shaw School of Botany, Washington, D. C., 1909-1912. Has written many valuable contributions to scientific subjects related to botany.

MOORE, JOHN BASSETT, Professor of International Law and Diplomacy at Columbia University and a distinguished publicist and writer on international law; born Dec. 3, 1860, at Smyrna, Del., he was admitted to the Delaware bar in 1883. He entered the State Department as a law clerk in 1885, and was appointed Third Assistant Secretary of State in 1886. While he continued in the public service a great part of his time, he was after 1891 professor of international law at Columbia. In 1898 during the Spanish-American War he was for a time Acting Secretary of State, and was counsel to the American Peace Commission which drew up the treaty with Spain. From 1899 he has represented the United States on many important diplomatic enterprises. In 1913 he became counselor to the State Department, but resigned in 1914 to resume his work at Columbia. He has published a number of authoritative treatises on his subject, the largest being his "Digest of International Law" (8 vols., 1906).

MOORE, JOSEPH HAMPTON, mayor of Philadelphia; born in Woodbury, N. J., in 1864. After graduating from public schools he became a reporter and assistant editor of the Philadelphia "Public Ledger." In 1895 he entered politics and became Chief Clerk of the City Treasurer, and in 1901, City Treasurer. In 1905 he was elected to fill an unexpired term in the House of Representatives, and then from 1907 to 1919 successively re-elected as the candidate of the Republican party. In 1919 against the will of the leaders of the Republican party in Philadelphia he won the nomination for mayor of that city and took office in January, 1920.

MOORE, SIR JOHN, a British military officer; born in Glasgow, Scotland, Nov. 13, 1761. He served at Minorca, in the American War, as Brigadier-General in the West Indies (1795), in Ireland during the rebellion of 1798, in Holland in 1799, and in Egypt in 1801, where he was severely wounded. Moore was now regarded as the greatest living British general. In 1808 he was appointed commander-in-chief of the British army in Portugal to operate against Napoleon. He advanced to Salamanca, but was finally compelled to retreat to Corunna. The absence of the fleet to receive his army forced him to a battle against Marshal Soult, in which Moore fell, mortally wounded, in the hour of victory, Jan. 16, 1809.

MOORE, THOMAS, an Irish poet; born in Dublin, Ireland, May 28, 1779. He was the son of a Catholic grocer. From the school where Sheridan had

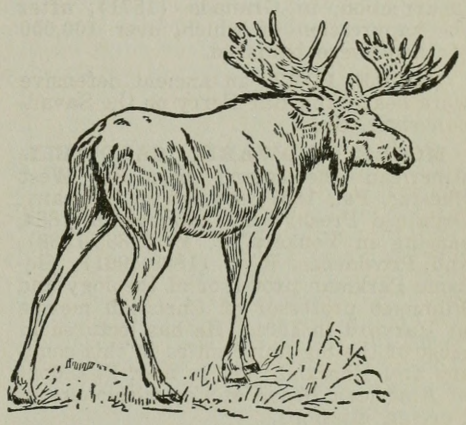
been educated, he passed in 1794 to Trinity College, and thence, after taking his B. A., in 1799, to the Middle Temple, London. His translation of Anacreon came out in 1800. It proved a great hit. In 1801 followed the "Poetical Works of the late Thomas Little." In 1803, through Lord Moira's influence, he was appointed registrar of the Admiralty court at Bermuda. For his "Odes and Epistles" (1806) he was sharply taken to task in the "Edinburgh." The bulletless duel with Jeffrey was the consequence, but which left the non-combatants fast friends for life. In 1811 he married an actress, Bessy Dyke (1793-1865). Meanwhile he had published the earlier of the "Irish Melodies" (10 parts, 1807-1834), and "The Twopenny Post-bag" (1812). In 1817 "Lalla Rookh" appeared. Longmans paid him $15,000; the "Irish Melodies" brought in $2,500 a year; and about this time his Bermuda deputy embezzled $30,000. Moore's liability was ultimately paid by his pen; but in 1819, to avoid arrest, he went to Italy. He settled in Paris, where he wrote "The Loves of the Angels" (1823) and a prose romance, "The Epicurean" (1827). He returned in 1822, producing in the succeeding years "Memoirs of Captain Rock" (1824), the "History of Ireland" (1827), "Lives" of Sheridan (1825), Byron (1830), and Lord Edward Fitzgerald (1831). In 1835 he received a pension of $1,500, but his last days were clouded by sorrow and suffering—the loss of his two sons, and the decay of his mental faculties. He died near Devizes, England, Feb. 25, 1852.

MOORE, WILLIS LUTHER, American meteorologist; born in Scranton, Pa., 1856. Was printer during his youth, then entered Signal Corps, which later became the U. S. Weather Bureau, in 1876. Rose through hard study, becoming chief of Weather Bureau, 1895-1913. In 1914 became professor of applied meteorology of George Washington University. Has lectured extensively and contributed to scientific publications, and published "Descriptive Meteorology" (1901).

MOORHEAD, a city of Minnesota, the county-seat of Clay co., situated on the Red river of the North, and on the Northern Pacific and Great Northern railroads. It contains the State normal school and Concordia College. It has also an excellent public library. The city is the center of a productive agricultural community. It has grain elevators, silo factories, railroad yards, foundries, and machine shops. Pop. (1910) 4,840; (1920) 5,720.

MOORUK (*Casuarius Bennettii*), a variety of cassowary, inhabiting the island of New Britain.

MOOSE, the name applied to the deer of the genus *Alces*, the largest quadruped of North America. The name comes from the Algonquin word *musu*, meaning wood eater. The male, called the bull moose, is much larger than the female. It usually stands over 6 feet high at the shoulder, with the weight sometimes exceeding half a ton. The head of the moose is large and bears antlers of unusual size and shape. It has large nostrils and a large hairy muzzle. This, together with the antlers, gives the head an ungainly aspect. The legs are long and the neck short and stout. The front



MOOSE

legs are longer than the rear ones and this gives the moose when running an awkward gait. The color is usually brown, the legs yellowish. During the summer the moose are solitary in their habits. The breeding season begins in September and at this season the bulls lose their natural timidity and become savage. Moose often gather during the winter in herds and form moose yards by tramping the snow so that the shrubs and young trees may be used for food. Moose are among the finest of game animals and they have been so thoroughly hunted that their numbers have been greatly reduced in all the settled portions of the United States. The common moose is found throughout Canada and in Maine, Minnesota, and the northern Rocky Mountains. In nearly all the States where they are found they are protected in certain seasons of the year. A national moose preserve has been established in northern Minnesota. They are also preserved in Alaska and in New Brunswick.

MOOSEHEAD LAKE, the chief lake in New England, situated on the border of Somerset and Piscataquis counties, Maine. It is about 35 miles long and 12 miles wide. It has an area of about 115 square miles. The Roach and Moose rivers empty into it, and its outlet is the Kennebec river. The lake is one of the most important centers for hunting in New England and at Greenville are excellent hotel accommodations.

MOOSEJAW, the chief city of a division of Moosejaw, Saskatchewan, Canada, on the Moosejaw river, and on the Canadian Pacific, Grand Trunk Pacific, and Canadian Northern railways. The city has many important public edifices, including a public library, court house, city hall, and collegiate institute. It has also important industrial interests, including iron works, flour mills, lumber mills, and manufactories of automobiles and tractors. Pop. about 14,000.

MOOSE, LOYAL ORDER OF, an American secret and benevolent organization founded by Dr. J. H. Wilson at Louisville, Ky., in 1888. The purposes of the order are social and fraternal, and to furnish payments to members during illness, and funeral benefits. The first lodge was established at Cincinnati, O. The organization owns an estate of 1,000 acres at Mooseheart, near Aurora, Ill., where has been established a home, farm, and school for orphans and dependent members. The order is governed through the supreme lodge. There were in 1920 1,600 lodges and over 600,000 members.

MOPLAS, a race of southern India, mainly near the Malabar coast, who as fanatical Mohammedans have caused trouble by outbreaks. Descended from the old Arab traders, they number about 700,000.

MOPSUS, a famous legendary Greek prophet, son of Apollo, and grandson of Tiresias. He vanquished Calchas in prophetic skill, and fell by the hand of the prophet Amphilochus, whom he at the same time slew.

MOQUEGUA, maritime province of Peru, area 5,550 square miles, traversed by Andes, fertile, the vine being chiefly cultivated. Pop. about 43,000. Capital, Moquegua, wine mart; pop. about 5,000.

MOQUI (mō-kē') **INDIANS**, a semi-civilized people living in seven towns in northern Arizona. The first accounts of them date from the expedition of Coronado in 1540. They are kind-hearted and hospitable, cultivate the soil, raising grain and vegetables, and possessing large flocks of sheep and goats. They weave very fine blankets, an art which they have taught several neighboring tribes. The houses are built of stone, set in mortar, and perched upon the summits of almost inaccessible mesas. They number about 1,600.

MORA, LUIS, American painter; born at Montevideo, Uruguay, 1874. Studied at Boston Museum Art School and Art Students' League, New York. At first attracted notice as a magazine illustrator. In 1900 he was commissioned to decorate the public library at Lynn, Mass. He won numerous gold medals for his work: Philadelphia Art Club (1901), Penn. Fine Arts (1902), Hallgarten prize National Academy of Design (1905), Evans prize, Salmagundi Club (1908), Shaw prize, National Academy (1910). Among his more notable paintings are "Spanish Café" (1906); "After the Bullfight" (1910); "Summer Morning" (1912); "Evening News" (1914). His work shows the influence of the old Spanish masters, but is distinctly modern in treatment.

MORADABAD (mō-rä-dä-bäd'), a town of British India, capital of a district, and center of a large trade in country produce; on the Ramganga, 100 miles E. by N. of Delhi. It is noted for its metal-work. Pop. about 81,000.

MORAINE (rān'), in physical geography and geology, the debris of rocks brought into valleys by glaciers. There is always one line of blocks on each edge of the icy stream, and often several in the middle. The former are called lateral, and the latter medial moraines. A large portion of these rocky fragments at length reaches the end of the glacier, which is known as a terminal moraine.

MORALITY, or **MORAL PLAY**, a sort of allegorical play, embodying moral discourses in praise of virtue and condemnation of vice, the dialogue being carried on by personifications of virtues and abstract qualities. The Devil of the earlier Miracle Plays became the Vice of the latter. Moralities first appeared about the beginning of the reign of Henry VI., and lingered till the reign of Elizabeth (about 1600).

MORAN, EDWARD (-ran'), an American painter; born in Bolton, England, Aug. 19, 1829. He removed to Philadelphia in 1844; studied art under Hamilton and Weber, and first exhibited in 1853. He was noted as a marine painter, but turned to figure painting. Among his works are "Launch of the Life-boat," "The Lord Staying the Waters," "Out-

ward Bound," and many views of New York Bay. He died in New York City, June 9, 1901.

MORAN, THOMAS, an American painter, brother of E. Moran; born in Bolton, England, Jan. 12, 1837. Coming to the United States, he was apprenticed to an engraver at Philadelphia, and began water-color landscapes in 1856. In 1871 he accompanied Prof. F. V. Hayden's expedition to the Yellowstone river, and in 1873 Major Powell's expedition to the Colorado river. As a result of these journeys he painted "The Grand Cañon of the Yellowstone" and "The Chasm of the Colorado," now in the capitol, at Washington.

MORANA (mō-rä'nä), the Bohemian goddess of winter and death.

MORAT (mō-rä) (German, Murten), a small town in the Swiss canton of Freiburg. Here, June 22, 1476, the Swiss gained a victory over Charles the Bold, Duke of Burgundy.

MORAVA (mō-rä'vä), the chief river of Moravia, a tributary of the Danube, which it joins after a course of about 200 miles.

MORAVIA (German, Mähren), a N. W. province or crownland of the Austrian Empire until the World War (1914-1918); area, 8,583 square miles. It is inclosed by the Carpathians and other mountains, and belongs almost entirely to the basin of the March or Morava, a tributary of the Danube. The minerals are of considerable importance, and include iron, coal, graphite, and slate. Nearly 97 per cent. of the soil is productive. Fruit is very abundant, and large quantities of wine are annually produced. Sheep in great numbers, and cattle, are reared. Moravia is the most important manufacturing province of the empire, after Austria proper and Bohemia. Its woolen industries are of world-wide fame. The chief towns are Brünn, Olmütz, Znaim, and Iglau. About 70 per cent. of the inhabitants are Slavonians (Czechs) and nearly 30 per cent. Germans. In 1029 Moravia was united to the kingdom of Bohemia, with which it passed to Austria in 1526. After the World War (1914-1918), by the terms of the peace treaty, a part of the state of Czecho-Slovakia. Pop. about 2,700,000.

MORAVIANS, a religious sect, called at first Bohemians, and constituting a branch of the Hussites, who, when the Calixtines came to terms with the Council of Basle, in 1433, refused to subscribe the articles of agreement, and constituted themselves into a distinct body. Their tenets were evangelical. In 1522 they made advances to Luther, who partially recognized them, but they ultimately adopted Calvinistic views as to the Lord's Supper. Their discipline was very strict. Driven by persecution, they scattered abroad, and for a time their chief settlement was at Fulnek in Moravia, whence Moravian Brethren, or Moravians. On May 26, 1700, was born Nicolaus Ludwig, Count von Zinzendorf, son of the chamberlain and state minister of Augustus II., Elector of Saxony and King of Poland. Having met with a Moravian refugee, Count Zinzendorf offered him and his co-religionists an asylum on his estate. The man, whose name was David, accepted the offer, and in 1722 settled with three other men at a place called by Zinzendorf Herrnhut = (the Lord's guard). Under his fostering care, the sect greatly increased in strength. Till his death, on May 9, 1760, he traveled, largely spreading their views. Small Moravian churches arose on the Continent, in England, in Ireland, and in America. Though they have never been numerous, they acquired great reputation from having a larger proportion of their membership engaged in foreign missions than any Christian denomination. In 1917 there were 30,441 communicants in America, 153,210 enrolled in mission provinces, 70,000 in Europe.

MORAWETZ, VICTOR, American corporation lawyer; born in Baltimore, 1859. Educated in Europe and at Harvard (LL.B., 1879). Admitted to the bar 1880, appearing as counsel for railways and other corporations. General counsel, director, and chairman of Atchison, Topeka and Santa Fé railroad, and is now a director and executive of the Norfolk and Western railroad, and an official in other corporations. Degree of LL.D., Williams College, 1914. Publications: "Law of Private Corporations" (1882); "Banking and Currency Problems in the United States" (1909).

MORAY, JAMES STUART, EARL OF, Regent of Scotland; born in 1533. He was the natural son of James V. of Scotland. In 1538 he was made prior of St. Andrews, in 1556 joined the Reformers, and became the head of the Protestant party in Scotland. He brought back his half-sister, Queen Mary, from France in 1561, acting as her prime minister, and the title of Earl of Moray was in 1564 conferred on him. Strongly opposed to the marriage of Mary to Darnley (1565); after it he openly appealed to arms, but was put to flight by

the queen, and forced to take refuge in England. He returned to Edinburgh, March 10, 1566, the day after Rizzio's murder, to which he was certainly privy. In April, 1567, he withdrew to France, but recalled by the nobles in arms against Mary; found her a prisoner at Lochleven, and himself appointed regent of the kingdom. On Mary's escape he defeated her forces at Langside, near Glasgow (May 13, 1568), and afterward was sent to England to conduct the negotiations against her. After his return to Scotland he succeeded in securing the peace of the realm, and settling the affairs of the Church. He was shot in Linlithgow, Scotland, Jan. 20, 1570.

MORAY FIRTH, an indentation of the German Ocean, on the N. E. coast of Scotland, measuring 21 miles across its entrance from Tarbet Ness, in Rossshire, to Stotfield Head, near Lossiemouth in Elginshire, and 39 miles thence to the mouth of the river Beauly.

MORBIHAN (mor-bē-*ong'*), a maritime department of France, formed out of ancient Brittany, bounded by the Atlantic on the S. and Finistère on the W.; area, 2,738 square miles; pop. about 600,000. The largest island is Belle Isle. The department forms a plateau, partly cultivated, partly occupied by tracts of heath and marsh. Morbihan is divided into the four arrondissements of Vannes, L'Orient, Ploërmel, and Pontivy. The chief town is Vannes, but the most populous is L'Orient. Many ancient customs still prevail; communal proprietorship survives there, and in some of the islands the priest, assisted by a council of notables, governs the people.

MORDVINS, a Finnic race, now however greatly intermingled with the Russians, who dwell along the middle course of the Volga, from the government of Nijni-Novgorod to that of Samara. They number about 790,000.

MORE, HANNAH, an English author; born in Stapleton, Gloucestershire, England, Feb. 2, 1745. She wrote verses at an early age, and in 1762 she published "The Search after Happiness," a pastoral drama. In 1773 she went on a visit to London, and was introduced to the Garricks, Dr. Johnson, Burke, Sir Joshua Reynolds. She wrote two tales in verse, and two tragedies, "Percy" and "The Fatal Secret." After the publication of her "Sacred Dramas" she retired to Cowslip Green, near Bristol, where she did much to improve the condition of the poor in her neighborhood by establishing schools. Her novel, "Cœlebs in Search of a Wife," and a tract called "The Shepherd of Salisbury Plain," are some of the most popular of her works. She died in Clifton, England, Sept. 7, 1833.

MORE, PAUL ELMER, author; born in St. Louis, Mo., 1864, he graduated from Washington University in 1887 and attained his A.M. degree at Harvard in 1893. During the following year he was assistant instructor in Sanskrit at Harvard, and taught classical literature in addition, 1895-1897, at Bryn Mawr. He was literary editor of "The Independent" from 1901 to 1903, of the New York "Evening Post" from 1903 to 1909, and editor of "The Nation" from 1909 to 1914. His works include: "A Century of Indian Epigrams," "The Judgment of Socrates," translation of "Prometheus Bound" of Æschylus, "Life of Benjamin Franklin," "Shelburne Essays" (9 vols.), and "Platonism."

MORE, SIR THOMAS, an English statesman; born in London, England, Feb. 7, 1478. He was the only son of Sir John More, a judge of the Court of King's Bench. A portion of his youth was spent in the family of Cardinal Morton, Archbishop of Canterbury, and chancellor; and he was then sent to Oxford, and afterward entered at Lincoln's Inn. He had already formed an intimate and lasting friendship with Erasmus. About 1502 he became a member of Parliament, upholding the privileges of the House of Commons to treat all questions of supply as their own exclusive business. On the accession of Henry VIII. he was made under-sheriff of London. In 1514 he was envoy to the Low Countries, soon after a privy-councillor, and in 1521 was knighted. In 1523 he became speaker of the House of Commons, and in 1529 succeeded Wolsey in the chancellorship. When Henry began his attacks on the papal supremacy More supported the old system. Henry marked him out for vengeance as an opponent of his matrimonial views. He was requested to take the oath to maintain the lawfulness of the marriage with Anne Boleyn. His refusal led to his committal to the Tower and execution, July 6, 1535. His chief work is the "Utopia" (in Latin), a philosophical romance describing an ideal commonwealth.

MOREAU, JEAN VICTOR (mo-rō'), a French general; born in Morlais, France, Aug. 11, 1761. He was educated for the law, but enlisted at 17, and thenceforth devoted himself to a military career. In 1796 he was commander of one of the two French armies that invaded Germany. The other army, under

General Jourdan, was completely defeated by the Austrians, who then brought their whole force to bear on Moreau. In this emergency, Moreau extricated himself by the retreat through the Black Forest. Napoleon, in 1800, gave Moreau the command of the armies of the Danube and the Rhine; and in the winter of that year Moreau gained the great victory of Hohenlinden. He was afterward suspected of plotting against Napoleon's government, and was banished from France. He lived in the United States till 1813, when he returned to Europe and joined the armies of the allied sovereigns against the French. He was mortally wounded at the battle of Dresden, Aug. 27, 1813, and died in Laun, Bohemia, Sept. 20.

MORECAMBE BAY, an inlet of the Irish Sea, separating the main portion of Lancashire, England, from the detached portion of Furness; length 18 miles; average breadth about 10 miles; it receives the Leven, the Kent, and the Lune.

MOREHEAD, JOHN ALFRED, American clergyman and educator; born in Pulaski co., Va., Feb. 4, 1867. Educated at Roanoke College and graduated from Lutheran Theological Seminary, Mt. Airy, Philadelphia, 1892. Studied at Berlin and Leipsic, 1901-1902. (D. D., Roanoke College, 1902.) Ordained to the Lutheran ministry 1892; Burke's Garden pastorate, Va., 1892; First English Lutheran Church, Richmond, Va., 1894-1898; president, and professor of systematic theology Southern Lutheran Theological Seminary, 1898-1908; president of Roanoke College, 1903; president of the United Synod of the South, 1910-1914.

MOREL, or MORELLE (of the form morel), *Morchella esculenta*, and edible fungus. It has a pale-brown pileus, deeply pitted all over, with raised anastomosing lines between the depressions. It grows in orchards, woods, and forests. It has an agreeable smell and taste. Also (of the two forms): *Solanum nigrum*. Called also petty morel, the great morel being *Atropa belladonna*.

MORELIA (mō-rā'lē-ä), a town of Mexico, capital of the State of Michoacan, 125 miles W. N. W. of Mexico City, in a valley surrounded by high mountains; altitude 6,400 feet. It has a fine cathedral, and a magnificent aqueduct, dating from 1788, for the supply of water. It is in one of the chief sugar-growing districts in Mexico and was the birthplace of General Morelos, after whom the town was named. Pop. about 40,000.

MORELLA (mō-rāl'yä), a town of Spain, 80 miles N. by E. of Valencia. It was the stronghold of Cabrera, the Carlist general, who scaled the castle on Jan. 25, 1839. It was retaken in July, 1840, by Espartero.

MORELLO, a fine variety of cherry with fruit that becomes almost black if allowed to hang.

MORELOS (mō-rā'los), one of the States of Mexico (since 1869), immediately S. of the highest volcanic region of the Anahuac plateau; area, 2,773 square miles; pop. about 185,000. The country is very broken and covered with forests, and is drained by the Mexcala river.

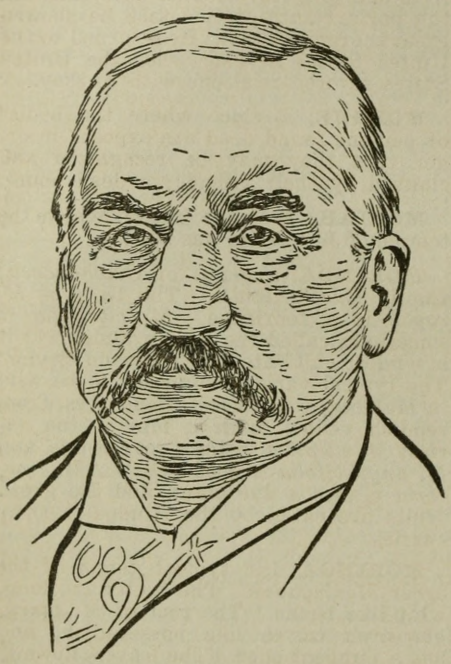
MORETON BAY, an inlet of the sea on the E. coast of Queensland, Australia; formed inside the islands of Moreton and Stradbroke, the former 26 miles and the latter 33 miles in length, and both about 5 miles in greatest breadth. The bay is 40 miles long by 17 broad; its S. half is dotted with islands and sandbanks. It receives the six considerable streams, Nerang, Pimpama, Logan, Brisbane, Pine, and Caboolture.

MORGAN, DANIEL, an American military officer; born in New Jersey, in 1736. He took a prominent part in the expedition under Arnold against Quebec, 1775-1776; was in command of the riflemen at the battle of Saratoga, in 1777; and defeated the British under Tarleton at the Cowpens, S. C., in 1781. He died in Winchester, Va., July 6, 1802.

MORGAN, EDWIN VERNON, American diplomat; born at Aurora, N. Y., 1863. Graduated at Harvard, 1890. Assistant instructor in history, 1891-1894. Studied in Berlin, 1891-1892. Professor of history, Adelbert College (Western Reserve University), 1895-1898. Secretary Samoan High Commission, 1899, and subsequently held various consular positions. United States Minister to Korea, 1905; Cuba, 1905-1910; Uruguay-Paraguay, 1910-1911; Portugal, 1911-1912.

MORGAN, G. CAMPBELL, an English clergyman; born Dec. 9. 1863. Ordained in the ministry of the Congregationalist Church in 1889. His most prominent pastorate was that of the Westminster Congregational Chapel, Buckingham Gate, London. From 1901-1904 he was a Northfield Bible Conference Extension lecturer, and is at present pastor of Highbury Quadrant Congregational Church. Dr. Morgan has written many works, chiefly on Christianity as interpreted by modern evangelism, such as "A First Century Message to Twentieth Century Christians," etc.

MORGAN, JOHN PIERPONT, an American capitalist; born in Hartford, Conn., April 17, 1837; was educated at the University of Göttingen, Germany. In 1871 was made a partner of the firm of Drexel, Morgan & Co., afterward J. Pierpont Morgan & Co., and was organizer of large railroad and industrial interests. In 1901 he created the largest financial concern known, the United States Steel Corporation, with a stock



JOHN PIERPONT MORGAN, SR.

capital of $1,100,000,000 and a working capital of $200,000,000. Mr. Morgan has been a large donor to charitable and educational institutions. His gifts include $500,000 to the New York Trade Schools; $1,350,000 to the New York Lying-In Hospital; a collection of ancient Greek ornaments valued at $150,000 to the Metropolitan Museum of Art; the finest mineral collection in the United States valued at $200,000 to the Metropolitan Museum of Art; $100,000 to the Young Men's Christian Association of New York City; $1,000,000 to Harvard College for the Medical School; etc. Died in Rome, 1913.

MORGAN, JOHN PIERPONT, an American banker, the son of J. P. Morgan, who died in 1913; born in New York City in 1867, graduated from Harvard University in 1889, and became a member of the firm of J. P. Morgan & Co. He inherited nearly all his father's fortune in 1913, as well as his father's position on many important banking and railroad directorates. In the same year he was elected director of the New York, New Haven and Hartford railroad, but resigned under the fire of criticism directed against his house and its connections with the road. During the World War of 1914-1917 Morgan negotiated large loans in America in the interest of the Allied governments. Mr. Morgan also served as the chief agent for many of the larger enterprises for the relief of Europe, such as the Belgian Relief Fund, etc.

MORGAN, JOHN TYLER, an American lawyer; born in Tennessee, June 20, 1824. He was admitted to the bar in 1845; presidential elector on the Breckenridge ticket in 1860; entered the Confederate service as a private in 1861; promoted for gallant and distinguished services, and in 1863 was commissioned Brigadier-General. He was elected to the United States Senate from Alabama in 1877; re-elected in 1883, 1889, and 1895. He was appointed one of the commissioners to represent the interests of the United States in the Board of Arbitration to which was submitted the Bering Sea dispute. He died June 11, 1907.

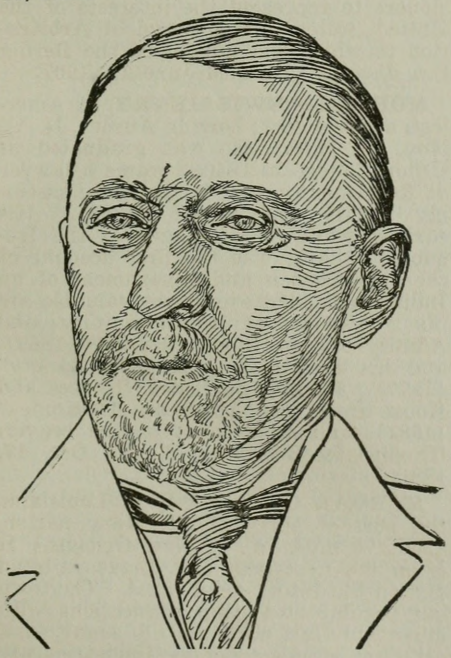
MORGAN, LEWIS HENRY, an American archæologist; born in Aurora, N. Y., Nov. 21, 1818. He was graduated at Union College in 1840; became a lawyer at Rochester; served in the State assembly (1861) and senate (1868). His earliest work, "The League of the Iroquois" (1851), was the first account of the organization and government of an Indian tribe; but even more valuable are his "Systems of Consanguinity and Affinity of the Human Family" (1869), and his treatise on "Ancient Society" (1877). He also published "Houses and House-life of the American Aborigines" (1881), and an account of the beaver. He died in Rochester, N. Y., Dec. 17, 1881.

MORGAN CITY, a city of Louisiana, the port of entry of St. Mary parish, about 70 miles W. of New Orleans. It is on the Louisiana and Texas railroad and on the Intercoastal canal. The town has regular steamship connections with important Gulf ports and its sugar, lumber, and truck-gardening industries are important. There is also a considerable trade in fur, hides, and live-stock. The city has a city hall, court house, high school, Elks Home, and a handsome park. The city was the scene of important actions during the Civil War. Pop. (1910) 5,477; (1920) 5,429.

MORGANATIC, a term used with reference to a matrimonial alliance between a man of royal blood (or in Germany of high nobility) and a woman of inferior rank. The children of such a marriage are legitimate, but do not inherit the rank or possessions of their father.

MORGANTOWN, a city of West Virginia and the county-seat of Monongalia co. It is about 100 miles S. of Pittsburgh, Pa., and is situated on the Monongahela river and on the Baltimore and Ohio, and the Morgantown and Kingwood railroads. It contains the West Virginia University and several important public buildings. Its chief industries are glass works, furniture factories, lumbering, flour milling, and mining. Pop. (1910) 9,150; (1920) 12,127.

MORGARTEN, a mountain slope on the E. margin of Lake Egeri, in the canton of Zug, Switzerland, the place where 1,400 men of the Swiss Forest Cantons—Schwyz, Uri, and Unterwalden—won a great victory over 15,000 Austrians, Nov. 15, 1315.



HENRY MORGENTHAU

MORGENTHAU, HENRY, appointed in 1920 Ambassador to Mexico by President Wilson; born in Germany in 1856 and came to the United States when he was nine years old. After graduating from Columbia University he entered the law firm of Lachman, Morgenthau, and Goldsmith in 1879. After thirty years as a New York business man, President Wilson in 1913 appointed Morgenthau Ambassador to Constantinople. The World War placed the business of the Allied nations in Turkey in his hands. No less than nine nations, in recalling their representatives from Constantinople, made Morgenthau responsible for the lives and property of their nationals. In the performance of this task he showed great energy and tact. He returned to the United States in 1917 when the United States severed relations with Turkey.

MORGUE, a place where the bodies of persons found dead are exposed in order that they may be recognized and claimed by their friends; a dead house.

MORIAH (-rī-), the hill on which the temple of Jerusalem was built.

MORINDA, a genus of *Cinchonaceæ*, family *Guettardindæ*. The bark of *M. royac* is a febrifuge. *M. citrifolia* is sometimes called the Indian mulberry; it is wild or cultivated in India and Ceylon. The typical variety, supposed to be wild in Malacca, furnishes various dyes, from reddish yellow to dark brown; the variety *M. elliptica* yields a scarlet dye, and *M. angustifolia* a good yellow. *M. tinctoria* is also a dye plant, and the green fruits are eaten by the Hindus in their curries.

MORINGA, the typical genus of the order *Moringaceæ*. The fruits are long, whip-like beans. The root of *M. pterygosperma* tastes like horseradish, and has a pungent odor. The leaves, flowers, and young seed are eaten by the natives of India in their curries. The seeds are the ben nuts which furnish the oil of ben. The plant is used by the Hindus as a stimulant and as a rubefacient. It is used by Indian calico printers. The bark yields a coarse fiber from which mats, paper, or cordage may be prepared. *M. aptera*, a native of India, long naturalized in the West Indies, also yields ben oil. The unripe fruits of *M. concanensis* are eaten by the natives of India in their curries.

MORIOKA, the chief city and capital of the province of Iwate, Japan, located about 40 miles from the sea and in a rugged, mountainous part of the island of Hondo. The manufactures are chiefly silk goods and kettles, while the soil yields abundant fruit. Pop. about 40,000.

MORISCOS, the name usually given to the Moors who remained in Spain after the taking of Granada in 1492; Mozarabes or Muzarabes, to the Christian

Spaniards who lived in the parts of Spain under Moorish rule; Mudejares, to the Moors who submitted to the Christians in the earlier periods of the reconquest.

MORLAIX (mor-lā'), a picturesque and flourishing port of France, in the Breton department of Finistère, on the Dossen. It has many quaint timbered houses, a huge railway viaduct 207 feet high, and manufactures of tobacco, paper, etc. Pop. about 15,000.

MORLEY, a municipal borough of England in the West Riding of Yorkshire. It has important manufactories of woolen goods and mill machinery. In the neighborhood are coal mines and stone quarries. Pop. about 25,000.

MORLEY, EDWARD WILLIAMS, American chemist, born in Newark, N. J., in 1838. Graduated from Williams College, 1860. Professor of Chemistry, Adelbert College, Western Reserve University, 1869. Professor of Chemistry, Cleveland Medical College, 1873-1888. He was the inventor of a superior apparatus for the analysis of gas. Publication: "Atomic Weight of Oxygen" (1893). President of American Association for the Advancement of Science, 1895, and of the American Chemical Society, 1899. Honorary President of the International Conference of Applied Chemistry, 1912.

MORLEY, HENRY, an English writer; born in London, England, Sept. 15, 1822. Educated at King's College; practiced medicine in Shropshire and teaching in Liverpool; and came to London as a journalist in 1851. From 1857 to 1865 he was an English lecturer at King's College; afterward Professor of English Language and Literature at University Hall. His works include "First Sketch of English Literature," "English Writers," "English Literature in the Reign of Victoria," etc. He died May 14, 1894.

MORLEY, VISCOUNT JOHN, an English author; born in Blackburn, Lancashire, England, Dec. 24, 1838. He was graduated at Oxford in 1859; called to the bar in 1873; was for some time editor of the "Literary Gazette," "Fortnightly Review" (1867-1882), "Pall Mall Gazette" (1880-1883), and "MacMillan's Magazine" (1883-1885). He was editor also of the "English Men of Letters" series, to which he contributed the volume on Burke. He was author of a "Life of Cobden," an "Essay on Wordsworth," "Walpole" in the "English Statesman" series, "Studies in Literature" (1891), etc. He was an unsuccessful candidate for the representation of Blackburn in 1869 and Westminster in 1880, but succeeded at Newcastle-on-Tyne in 1883. Radical in politics, he was one of Gladstone's chief supporters in his Home Rule scheme, and filled the office of Chief Secretary for Ireland for a short time in 1886; reappointed 1892-1895. Defeated at Newcastle in 1895; was elected to Parliament, 1896, for Montrose Burghs, which he represented until raised to the peerage in 1908; Secretary for India, 1905-1910; resigned to become President of the Council, holding the office until August, 1914, when he retired, being out of sympathy with British war plans. Among his principal later works are: "Studies in Literature" (1891); "Oliver Cromwell" (1900); "Lives of Cobden and Gladstone" (1903); "Recollections" (1917). Has received many honorary degrees from universities, and the Order of Merit, 1902; Chancellor Manchester University, 1902. Andrew Carnegie presented Lord Acton's valuable library to Viscount Morley, which the latter, in 1909, offered to Cambridge University.

MORMON, the last of a pretended line of Hebrew prophets, and the pretended author of "The Book of Mormon," or Golden Bible, written on golden plates.

MORMONS, or **LATTER DAY SAINTS**, a religious sect in North America, founded by Joseph Smith, Jr., at Fayette, Seneca co., N. Y., in 1830. In 1823, claiming that he was led by the inspiration of an angel who had appeared to him, he claimed to have discovered golden plates on which the records of Mormon were alleged to be inscribed. These, though found in 1823, he was not allowed by the angel to take up till 1827. They were inscribed with characters which were said to be reformed Egyptian, but which he was unable to read. There was, however, in the box where they were found, so he declared, a marvelous instrument called Urim and Thumin, by which he was enabled to read the mysterious letters and translate them into English. In 1830 Smith published an English translation of the plates under the title "The Book of Mormon," together with certificates of 11 men who claimed to have seen the plates. This book tells in a language which imitates the Scriptures how, at the time of King Zedekiah of Jerusalem, a pious Israelite by the name of Lehi, together with his family, migrated from Palestine to America, and described on these plates the account of his marvellous adventures as well as the revelations which God vouchsafed to him. Many of his sons, like Laman, went out into the wilderness and became the ancestors and chiefs of

the North American Indians. The descendants of his son Nephi became good Christians, many centuries before Christ, and among them were preserved the dignity of the priesthood and their sacred plates. To this family also appeared the Christ when He rose from the dead, and He chose from the family 12 apostles who within a brief time converted the whole country to Christianity; but when, at the beginning of the 4th century, the Church, in consequence of wars, became disintegrated, Mormon, a mighty hero and pious Christian, rose and drove out the Lamanites, who had in the meantime become red and fallen into barbarism. Nevertheless they returned about the year 400 and the Nephites perished before them. Mormon's son, Moroni, finished the history of his people in 420. The book was published in 1830, and it was at one time claimed that it was a plagiarism on a novel published in 1812 and written by a clergyman several years before; but recently this book has been discovered and compared with that of Mormon, and it is found that they are entirely different.

The new prophet immediately began to collect followers about him, and by April 6, 1830, he had organized a church at Fayette, N. Y. The next year the sect numbered several hundred members and moved to Kirtland, O., where they increased in numbers and wealth through the efforts of missionaries who were sent out by the prophet. In 1833 they were driven from Jackson co., Mo., and took refuge in Clay county and the surrounding regions. In 1838 Governor Boggs of Missouri issued an exterminating order against the Latter Day Saints, and they were driven out of that State. They went to Illinois, where by 1840, near Commerce, Hancock county, they had founded the city of Nauvoo, over which Smith had extraordinary civil and military authority. The city flourished, soon numbering more than 2,100 houses and having a beautiful temple built according to plans which Smith claimed he had received in a vision. In 1844 a discontented member of the Church issued a newspaper at Nauvoo assailing the prophet and threatening to expose various immoralities and misdeeds. The city council of Nauvoo passed an ordinance declaring the printing office a nuisance. It was destroyed by the officers of the law. Smith was blamed for this and a warrant was issued for his arrest. Before civil war actually broke out, the governor of the State induced Smith to surrender and go to Carthage. On June 27, 1844, a mob attacked the jail, overpowered the guard, killed Smith and his brother Hiram and wounded others of the prophet's party.

This did not put an end to Mormonism. Smith was succeeded by Brigham Young, who early in 1846 left Nauvoo with others. In the spring of 1847 a company of 143 started through the wilderness, and on July 24 arrived at the valley of Salt Lake, which he declared was the promised land. They made Salt Lake their place of settlement. Their new city became an important place on account of its position on the route of wagon trains to and from California.

Brigham Young, on account of his great influence, was named governor of the territory, and Congress granted him $20,000 for the erection of public buildings and $5,000 for a library, but in 1854 the Government appointed Colonel Steptoe as governor, and in 1857 A. Cumming in Brigham Young's place and sent him with 2,500 men to Utah. The expedition met with difficulties on account of the late season of the year and opposition on the part of the Mormons to having an army sent against them in time of peace, as they claimed that they had committed no hostile act against the United States Government. A peace commission was sent to Utah, and the people, who had already commenced to move away from their homes (which they had prepared to burn on the entrance of the army), were induced to return. Young remained governor de facto during the Civil War, 1861-1865. He ruled the community with all the autocratic power of an emperor. Many missionaries were sent out, and the number of Mormons increased with great rapidity. In 1890 was issued the famous manifesto forbidding polygamy. In 1896 Utah became a State.

The membership of the Mormons is about 410,000, and there are flourishing communities in other countries besides the United States. Mormons express their belief in the Trinity, that men will be punished for their sins, that through the atonement of Christ mankind may be saved by faith, in repentance, in baptism, in the laying on of hands for the gift of the Holy Ghost. They believe in a church organization comprising apostles, prophets, pastors, teachers, and evangelists; in the apostolic gifts of tongues, prophecy, visions; in the power of healing; in the Bible as the word of God, and in the book of Mormon as the further word of God. In 1862 the Federal Government enacted a law against polygamy, but little attention was paid to it, and not till twenty years later were severer statutes passed against it. In 1884 the con-

stitutionality of the law was established by the Supreme Court of the United States. In 1887 the Mormon Church was disincorporated by Congress and its immense property was confiscated with the exception of $50,000. Finally, in September, 1890, after the vast property holdings of the Church had been lost, President Woodruff issued his famous proclamation against polygamous marriages.

MORNING GLORY, a name given to several climbing plants of the convolvulus family, having handsome purple or white, sometimes pink or pale blue, funnel-shaped flowers.

MORNINGSIDE COLLEGE, a coeducational institution in Sioux City, Ia.; founded in 1894 under the auspices of the Methodist Church; reported at the close of 1919: Professors and instructors, 33; students, 788; president, F. E. Mossman, D. D.

MORNING STAR, in astronomy, the planet Venus when it is visible in the morning. Also a weapon used in ancient times. It consisted of a ball with spikes, united by a chain to a staff. Called also holy-water sprinkler.

MORO, those inhabitants of the Philippine Islands living in the Sulu Archipelago and the island of Mindanao who are Mohammedans. Most of them live in rude boats near the coast and wander from place to place wherever the fishing is good. Others of them live like the "lake dwellers" on houses erected on piles over the streams and ponds. They are in a rude stage of barbarism and are a cruel and warlike race. Polygamy and slavery are practiced among them, and as far as they have any government it is patriarchal. The Sultan of Sulu is supposed to be the supreme ruler, but his actual authority is small over the more distant groups.

MOROCCO, or **MAROCCO**, known to the natives as Maghreb-el-Aksa, "the farthest West," is a former empire or sultanate which, though at one time comprising a portion of Algeria in one direction, and exercising in the other a modified jurisdiction as far as Timbuktu, is now confined to that part of northwest Africa bounded on the E. (at the Wad Kiss) by Algeria, and on the S. by Cape Nun and the Wad Draa, though both here and on the Sahara side of the Atlas the limits of the empire are rather indeterminate. Area, about 219,000 square miles; pop. estimated at 6,000,000. Politically, Morocco comprises at present the old kingdoms of Fez and Morocco and the territories of Tafilet (Tafilalet) and Sus; but the two latter are almost independent, recognizing the Sultan only as the Prince of True Believers, an office which he holds as the most powerful of the Shereefs or descendants of Mohammed. These four principal governments are divided into 17 primary provinces or "amalats," each presided over by a Kaïd or "Bashaw," as the Europeans call him.

Topography.—Morocco is, as a rule, mountainous, the Atlas traversing it in several chains from S. W. to N. E., and by various spurs both to the coast country and to the desert. There are, however, numerous level plains, some of which are of great extent, and very rich, the soil being in many places a deep, black loam, evidently the bed of an ancient lake or of a primeval forest. There are also numerous more or less level plateaus similar to those of Algeria. But with the exception of parts of the Atlas, the forest of Mamora, the date and argan groves of the S., and a few straggling copses around the burial places of saints, Morocco has, in the course of the last thousand years, been almost denuded of timber, the palmetto scrub being about the most common representative of woodland.

Climate.—The climate of Morocco varies much, though the W. slope, being tempered by the sea breezes and protected from the hot desert winds by the Atlas, is temperate, the thermometer seldom falling below 40° or rising above 90°. But in summer the interior valleys are very hot, and in winter snow often falls in Fez and Mequinez, where ice an inch thick is by no means uncommon. Farther S. extremes of heat and drought are more common, though as a rule the climate is equable. In the Sus country and the region of Tafilet rain is scarce and in places almost unknown. But farther N., and on the Atlantic and Mediterranean slopes, it falls with tolerable regularity every year between October and April.

Trade.—The total value of imports in 1918 was $73,706,922, and for the exports, $24,654,973. The imports were chiefly cotton goods, sugar, tea, and wine. The exports consisted of eggs, breadstuffs, hides and skins, seeds, and vegetables.

Agriculture.—The principal products of the country are cattle, eggs, barley, corn, hides, vegetables. Among the fruits grown in quantities are figs, lemons, olives, oranges, and dates. Cotton growing was introduced in 1911. The soil is capable of extensive cultivation.

Education.—In 1918 there were 191 schools open to the public. There were 21,520 pupils, with 668 teachers.

Finance.—The public debt of the French protectorate is about $80,000,000. The estimated annual income is about $17,000,000, and the expenditure is about the same.

Transportation.—The French have spent large sums of money in the development of roads. There are about 1,300 miles of first-class roads in the protectorate and about 400 miles of secondary roads. Transportation is carried on to a considerable degree by motor trucks. A large number of railroads have been built, chiefly for military purposes. In 1919 a line from Taza to Fez, linking the eastern and the western systems, was in the process of construction. There are about 3,000 miles of telegraph lines in Morocco. The most important ports are Tetuan and Tangier, El Arish, Casa Blanca, and Mogador.

People.—The inhabitants consist of six principal groups. (1) The Berbers (Braber) or Kabyles, of whom the Amazigh, Shelluh, and Tuareg are only branches, are the aborigines. They inhabit for the most part the mountain regions, and are still only half subdued. (2) The Arabs are descendants of the invaders who came in the 7th century. (3) The Jews were very early settlers, semi-independent colonies still subsisting in the Atlas and the Sus country, though most of them in the towns are refugees driven out of Spain and Portugal. (4) A few thousands of Europeans, chiefly Spaniards, are almost entirely confined to the coast towns. (5) The "Moors," a term vaguely applied to all the Mohammedan inhabitants, are really Arabs with a large admixture of Spanish and other European bloods, and the name ought properly to be restricted to the inhabitants of the cities. (6) The Negroes, of whom there are large numbers, were brought from the Sudan as slaves.

Government. — The country is theoretically an absolute monarchy, but since the establishment of the French protectorate the Sultan is obliged to follow the policies of the French resident-general in all matters. The Sultan in 1920 was Mulai Yussuf.

History.—After being for more than four centuries a part of the Roman empire, and in the latter period of its sway veneered with a corrupt Christianity, "Mauritania Tingitana" fell (A. D. 429) into the hands of the Vandals, who held it till 533, when Belisarius having defeated them, it became subject once more to the Eastern empire. But in the year 680 the Arab invasion began, and with little intermission the Arabs have ever since been possessors of the country, and the entire population are now the most fanatical adherents of Mohammedanism. At first, with Spain, part of the caliphate of Bagdad, it became divided into several independent monarchies, and during this period the country enjoyed a prosperity to which it has ever since been a stranger. Morocco, though now more contracted than formerly, has at present, with the exception of the Spanish "presidios," no foreign strongholds on its coast, as there were up to the year 1769, when the Portuguese evacuated Mazagan; and since the unsuccessful war with Spain in 1859-1860 the country has not been disturbed by foreign hostilities. But it is still very backward. A passive resistance is offered to every improvement, and, though Christian slavery and piracy by government vessels have been abolished since 1817-1822 and foreign traders have nominally had access to all parts of the empire, the interior is not much different from what it was a thousand years ago. In 1902 an anti-Christian and anti-European rebellion broke out, and during that year and through 1903 the Sultan's forces were engaged in suppressing the uprising. The direct cause of the discontent was the Sultan's tendencies toward European ideas and his extravagance, together with the popular objection to various reforms instituted by him. After the repeated defeat of the Government forces, the Sultan began dismissing the Europeans employed in his army and his court. In 1905 and 1906 Morocco was brought under a concerted action of the Powers, and intrusted chiefly to France and Spain as their agents.

The German emperor strongly resented the domination of France in Morocco, and on March 31, 1906, arrived at Tangier and announced that German interests would be protected. War was at once threatened and was averted only by a conference of representatives of European countries, held at Algeciras, Spain, on June 16, 1906. By the terms of the agreement made by this conference, France was given wide powers in the regulation of Moroccan affairs, while to Spain was given the policing of several of the ports. During the first years of French domination there were several outbreaks, but the country was gradually restored to quietness under the wise and liberal French rule. France and Spain in 1911 entered into an agreement in regard to the administration of the country providing for co-operation. In the same year France and Germany signed an agreement concerning the French right to establish a protectorate, which was formally established in 1913. This defeat of German diplomacy re-

sulted in the immediate increase of the German army and was one of the steps toward the World War in 1914. In the World War Moroccan troops fought with great bravery in France and elsewhere. The country under the French régime has steadily progressed.

MOROCCO (Arabian, Marakesch, by which name it is usually known among European residents), the S. capital of the empire of the same name; between 4 and 5 miles from the left bank of the Tensift, at the N. end of an extensive and fertile plain; 1,447 feet above the sea. It is surrounded by a lime and earth wall, more than 5 miles in circumference, between 20 and 30 feet high, and pierced by seven gates. In the bazaar and merchants' quarter a considerable local trade is carried on with the country people, the mountaineers from the neighboring Atlas, and with Sus, Tafilet, Mazagan, Saffi, and Mogador. Morocco possesses many mosques, one of which, the Kutubia, has a tower 320 feet high. There are several tanning and leather-dyeing establishments of considerable extent, though of late years European goods have been gradually displacing native manufactures. Morocco was founded in 1072 by the Emir Jusef ben Tachefyn, and reached the summit of its prosperity in the 13th century. Population between 50,000 and 80,000.

MORÓN, town in Andalusia, Spain, on the Guadaira river, 32 miles S. E. of Seville. Region rich in cattle, olives, chalk, and marble quarries. Moorish castle in vicinity. Pop. about 18,000.

MOROXITE, the crystallized form of apatite, occurring in crystals of a brownish or greenish-blue color.

MORPHEUS (-fūs), in classical mythology, a minister of the god Somnus, who was wonderfully proficient in imitating the grimaces, gestures, words and manners of mankind. He is sometimes called the god of sleep.

MORPHINE, or **MORPHIA**, in chemistry, $C_{17}H_{19}NO_3$. Morphinum. The most important of the opium bases, discovered by Sertürner in 1816. It is obtained by decomposing an aqueous extract of opium by chloride of barium, and allowing the chloride of morphia to crystallize out. The crystals, which contain codeine, are dissolved, and the morphine is then precipitated by ammonia, and finally purified by recrystallization. It crystallizes from alcohol in colorless, lustrous, trimetric prisms, soluble in 500 parts of boiling water, easily soluble in alcohol, but insoluble in ether and chloroform. Morphine forms well defined salts with mineral and organic acids. The most characteristic and best defined salt is the hydrochloride, which crystallizes in slender, colorless needles, arranged in stellated groups, soluble in 20 parts of cold water, and in its own weight at the boiling heat.

MORPHOLOGY, that branch of natural science which treats of the laws, form, and arrangement of the structures of animals and plants, treating of their varieties, homologies and metamorphoses; the science of form. Morphology teaches that most organs of a plant, including the bracts, sepals, petals, stamens, and pistils, are modifications of leaves. With regard to animals, it investigates the tissues of which their structures are composed, the states through which each animal has to pass before reaching maturity, and the modifications of form which the same organ undergoes in different animals. For instance, the hand of a man, the forefoot of a mole, adapted for digging, are only modifications of one type. Morphology treats also of serial homologies in the same animal, and of homogeneous and homoplastic homologies of organs.

MORRIS, CLARA, an American actress; born in Toronto, Canada, in 1849; was taken to Cleveland, O., when an infant. In 1869 she became the leading lady in Wood's Theater, Cincinnati, O., and a year later joined Daly's Fifth Avenue Company, New York. She soon achieved prominence in emotional rôles, and afterward made many tours throughout the United States. Her leading rôles include Camille; Alixe; Miss Multon; Mercy Merrick in "The New Magdalene"; Cora in "L'Article 47"; etc. She is the author of "A Silent Singer"; "Little Jim Crow"; "Autobiography of Clara Morris"; "A Paste-Board Crown"; etc.

MORRIS, SIR EDWARD PATRICK, Newfoundland statesman; born at St. John's in 1859, he studied at Ottawa University, and after being called to the bar was elected in 1885 to the legislature. From 1890 to 1895 he was Attorney-General and in the following years led in the campaign of the reorganization of the railroads. From 1903 onward he was head of the Justice Department and in 1909 became Premier. He represented Newfoundland in London on the French shore question, and at the Imperial Conference in 1911. He was knighted in 1904, and made Privy Councillor seven years later. The legal work known as "Morris's Reports" are his chief contribution to literature.

MORRIS, GOUVERNEUR, an American statesman; born in Morrisania, N. Y., Jan. 31, 1752. He was member of the Continental Congress, 1777-1780; of the committee that drafted the Constitution, 1787; minister to France, 1792-1794; United States Senator from New York, 1800-1803. He was noted for ability both in political thought and political action. Specimens of his writing can be seen in Jared Sparks's "Memoirs of Gouverneur Morris" (3 vols. 1832), Annie Cary Morris's "Diary and Letters of Gouverneur Morris" (2 vols. 1889), etc. He died in Morrisania, Nov. 6, 1816.

MORRIS, GOUVERNEUR, American story writer and novelist; born in New York, 1876. Educated at Yale University, graduating in 1898. Engaged in literary work, contributing stories to magazines, which were collected and published in book form. Has also written scenarios for the moving-picture screen. His published works include: "A Bunch of Grapes" (1897); "Tom Beauling" (1901); "Aladdin O'Brien" (1902); "The Pagan's Progress" (1904); "Ellen and Her Man" (1904); "The Footprint, and Other Stories" (1908); "Putting on the Screws" (1909); "Spread Eagle" (1910); "The Voice in the Rice" (1910); "It, and Others" (1912); "If You Touch Them They Vanish" (1913); "The Incandescent Lily" (1914); "His Daughter" (1918); "The Wild Goose" (1919).

MORRIS, SIR LEWIS, an English poet; born in Carmarthen, Wales, in 1833. He was educated at Oxford, where in 1855 he was graduated first-class in classics, and won the Chancellor's prize; practiced law till 1881, then honorary secretary, afterward treasurer, to the University of Wales; in 1877 elected an honorary fellow of Jesus College, Oxford; was knighted in 1895. He wrote: "Songs of Two Worlds" (1872, 1874, and 1875); "The Epic of Hades" (1876); "Songs Unsung"; "Idylls and Lyrics," etc. He died Nov. 12, 1907.

MORRIS, ROBERT, an American financier, and a signer of the Declaration of Independence; born in Lancashire, England, Jan. 20, 1734. Coming to America at an early age, he embarked in mercantile business in Philadelphia, and in the Revolution took a prominent part in upholding the National cause. In 1775, he was elected to Congress, and in 1781 appointed Superintendent of Finance. He died in Philadelphia, Pa., May 8, 1806.

MORRIS, ROLAND SLETOR, United States Ambassador to Japan, appointed by President Wilson in July, 1917; born in Olympia, Wash., in 1874; educated at Princeton University. In 1899 he began the practice of law in Philadelphia, specializing in corporation law. In politics he has taken an active part in the councils of the Democratic party, being a delegate to several of the national conventions, and State chairman of the party in Pennsylvania.

MORRIS, WILLIAM, an English poet; born in Walthamstow, Essex, England, March 24, 1834. He was graduated at Oxford. His artistic bent prompted him to embark in the designing and manufacture of high-class decorations for house interiors. Morris published an epic poem, "Jason" (1867); "The Earthly Paradise" (1868-1870); "Love Is Enough" (1873); "Sigurd the Volsung" (1877); etc. He translated various Scandinavian works, translated Virgil's "Æneid" and Homer's "Odyssey" into English verse, and published several lectures on art. He was a leader of the socialistic movement in Great Britain. He died in Hammersmith, England, Oct. 3, 1896.

MORRIS ISLAND, a small island at the S. enterance to Charleston Harbor, S. C. During the Civil War it was occupied by Fort Wagner and other fortifications.

MORRISON, ARTHUR, an English writer; born in 1863. During his employment and residence for some years as secretary of a Charity Trust in the East End of London, he made a study of life in the slums, which he reproduced in his powerful "Tales of Mean Streets" (1895), and "The Child of the Jago" (1896). He wrote also: "Martin Hewitt, Investigator" (1894), detective stories; "The Dorrington Deed-Box"; "Green Ginger," etc.

MORRISON, FRANK, an American labor leader, born at Franktown, Ontario, in 1859. He was educated in the common schools and studied law at the Lake Forest University Law School, in Chicago. Prior to that time he had worked as a printer. He took an active part in the labor movement, and from 1897 was secretary of the American Federation of Labor.

MORRISON, JOHN FRANK, American military officer, born in Charlottesville, N. Y., 1857. Graduated from West Point, 1881, and served in Cuba and Philippines. Accompanied Japanese armies as American observer during Russo-Japanese War. Was appointed instructor at Leavenworth service schools, becoming chief of department of military art in

1907. Went to Hawaii and Panama (1912-1913) to plan defense works. End of 1915 became Brigadier-General, and Major-General in 1917. Made tour of inspection in France during 1918, then was appointed Director of Training. His teaching and writing has caused radical changes in drill methods in the U. S. Army. His chief work is "A Study in Troop Teaching" (1911), in which he was assisted by E. T. Munson.

MORRISON, THEODORE NEVIN, American Protestant Episcopal bishop; born Ottawa, Ill., 1850. Educated at Illinois College, Jacksonville, Ill., and at the General Theological Seminary. Took Holy Orders in 1874. Rector of St. Paul's Church, Pekin, Ill., 1873-1876. Church of the Epiphany, Chicago, 1876-1899. Consecrated Bishop of Iowa, 1899.

MORRISTOWN, a city and county-seat of Morris co., N. J.; on the Lackawanna and the Morristown and Erie railroads; 31 miles W. of New York. It is a favorite residence suburb of New York. The city is built on elevated ground about 500 feet above sea-level, and is surrounded by beautiful ranges of hills. Here are the remains of Fort Nonsense, built by Washington's troops and now marked with a memorial monument, the building occupied by Washington as his headquarters, which is filled with relics of the Revolutionary period, All Souls' Hospital, Memorial Hospital, Morris Academy, Dana Seminary, public library, gas and electric light plants, State and National banks, etc. Four miles distant, on Morris Plains, is the State Lunatic Asylum, one of the most complete institutions of its kind in the world. The city has manufactures of hosiery, wire, iron, etc. Pop. (1910) 12,507; (1920) 12,548.

MORRISTOWN, a city of Tennessee, the county-seat of Hamblen co., on the Southern and the Knoxville and Bristol railroads. It is the center of a rich agricultural region, and has also important manufactures including flour, stoves, hosiery, furniture, concrete, wagons, etc. It is the seat of the Morristown Normal and Industrial College, and an institution for negroes. Pop. (1910) 4,007; (1920) 5,875.

MORRO CASTLE, a Spanish fort at the entrance to the harbor of Havana, Cuba; its dungeons are said to have been the prisons of many convicted of political offenses. Also an imposing fortification on the cliffs overlooking Santiago Bay, Cuba. It was in sight of this fort and under fire of its guns that Lieutenant Hobson and seven men of the United States navy, on June 3, 1898, sank the "Merrimac" at the entrance to the harbor to prevent the Spanish fleet from escaping. On their capture, while attempting to regain their vessels, the men were imprisoned for some time in Morro.

MORROW, WILLIAM W., Judge of the United States Circuit Court; born in Milton, Ind., in 1843, and educated in the public schools of California. In 1869 he was admitted to the bar, and after serving as Assistant United States District Attorney became in 1882-1885 counsel before the Alabama Claims Commission. From 1885-1892 he served in Congress as representative from California. Prominent in the politics of the Republican party, he was appointed by President McKinley United States Circuit Judge, May 20, 1897.

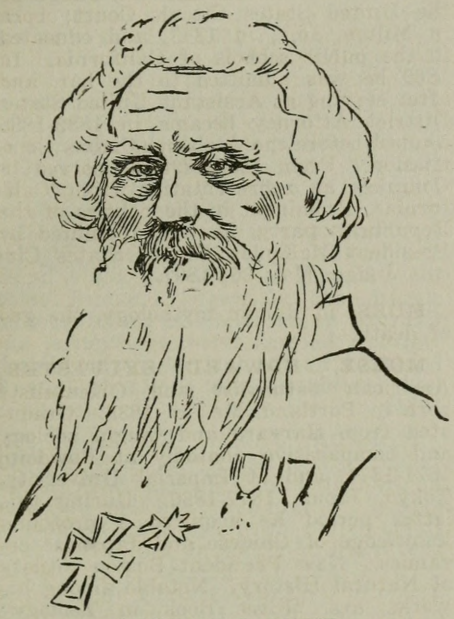
MORS, in Roman mythology, the god of death.

MORSE, EDWARD SYLVESTER, American naturalist and Orientalist; born in Portland, Me., in 1838. Graduated from Harvard and taught zoölogy and comparative anatomy at Bowdoin, 1871-1874, and at Imperial University, Tokyo, Japan, 1877-1880. During this latter period he acquired a profound knowledge of Chinese and Japanese ceramics. Now President Boston Society of Natural History. Notable among his works are "First Book in Zoölogy" (1875); "Early Races of Man in Japan" (1879); "Glimpses of China and Chinese Homes" (1902); and "Mars and Its Mystery" (1906).

MORSE, JOHN TORREY, author; born in 1840. He studied at Harvard, graduating in 1860, and then till 1880 practiced law at Boston. For three years ending 1879 he lectured on history at Harvard, and was associate editor with Henry Cabot Lodge on the "International Review." Since 1880 he has given himself over to literature, particularly in the biographical field. His works include: "Treatise on the Law Relating to Banks and Banking"; "Law of Arbitration and Award"; "Famous Trials"; "Life of Alexander Hamilton" (2 vols.); "Life and Letters of Oliver Wendell Holmes" (2 vols.); "John Quincy Adams"; "Thomas Jefferson"; "John Adams"; "Benjamin Franklin"; "Abraham Lincoln"; "Life and Letters of Colonel Henry Lee."

MORSE, SAMUEL FINLEY BREESE, an American inventor; born in Charlestown, Mass., April 27, 1791. He was educated at Yale College, where he devoted special attention to chemistry and

natural philosophy; but in 1811 went to England to study painting under West. In 1813 he was awarded the gold medal of the Royal Academy. Returning to the United States in 1826 he established the National Academy of Design, of which he was first president. About 1832 he



SAMUEL F. B. MORSE

worked on a plan to use electro-magnetism in telegraphy, and in 1835 exhibited a workable instrument. By July, 1837, this instrument was perfected, and ultimately in 1843 Congress granted him means to construct an experimental line between Washington and Baltimore. From that time Morse's instrument came into general use in the United States and Europe. In 1857 the representatives of 10 countries met at Paris, and voted him $80,000. He died in New York City, April 2, 1872.

MORTAR, or MORTER, a vessel, generally in the form of a bell or conical frustrum, in which substances are pounded by a pestle. When large, they are made of cast-iron; a smaller size is made of bronze, and those for more delicate pharmaceutical operations are of marble, pottery, porphyry, or agate. They are used in connection with a pestle, which in the larger mortars is of iron, and in the smaller is of porcelain or agate. Also a calcareous cement. Hydraulic mortar is made from certain limestones which include in their composition so large a proportion of iron and clay as to enable them to form cements which have the property of hardening under water, and are called hydraulic limestones.

Short pieces of ordnance used to force shells at high angles, generally 45°, the charge varying with the range required. They are distinguished by the diameter of the bore, such as 13-inch, 10-inch, and 8-inch, which are commonest, forms of smooth-bore mortars. They are made of cast iron or bronze; but rifled mortars, resembling short howitzers, are of wrought iron or steel. The bronze mortars are usually of small caliber.

MORTE D'ARTHUR (môrt där'thur), a famous compilation of romances relating to the life and death of King Arthur and the knights of the Round Table, made by Sir Thomas Malory and printed by Caxton (1485). It is in prose, and was translated from the French prose romances. See MALORY, THOMAS.

MORTGAGE, in law, the conveyance of property as security for the payment of a debt or performance of a promise, and on the condition that if the debt be duly paid or the promises fulfilled the conveyance shall be void. The term is applied: (1) To the act of making such a conveyance; (2) to the deed by which such conveyance is made; (3) to the rights thereby conferred on the mortgagee. He who makes the mortgage is the mortgagor; he for whose benefit it is made is the mortgagee. Whatever may be sold may be mortgaged. Mortgages may therefore cover chattels or real estate. Mortgages must be in writing, either in one single instrument containing the whole case, or in two, one containing the conveyance, the other the condition of the conveyance, this last document being the "defeasance." A deposit of title-deeds, with a verbal agreement, creates an equitable mortgage in some States which recognize this proceeding as a mode of securing a debt. The different States regulate the time in which mortgages are to be recorded, in order to protect innocent purchasers, but an unrecorded mortgage is good as against the mortgagor, or any purchaser knowing of its existence at the time of his purchase. In those States which recognize chattel mortgages (or mortgages of personal property), a record of the same within a specified time is required, to render them valid as against other claimants.

MORTIFICATION, the complete death of part of the body. It is generally the result of acute inflammation, but may be also an idiopathic disease. In Scots

law: (1) The disposition of lands for religious or charitable purposes. (2) A term applied to lands given formerly to the Church for religious purposes, or, since the Reformation, for charitable or public purposes. By the present practice, when lands are given for any charitable purpose they are usually disposed to trustees, to be held either in blanch or feu. (3) A charitable fund or institution obtained from the yearly revenue of such lands.

MORTIMER, EDMUND, EARL, espoused Philippina, daughter of Lionel, second son of Edward III., King of England. ROGER, son of the preceding, was declared heir to the crown in 1385, but died in 1399, leaving an only daughter, who married Richard, Duke of York, giving to that family a claim to the throne of England. Hence arose the wars of the "Red and White Roses," between the houses of York and Lancaster.

MORTIMER, ROGER, EARL OF MARCH, an English politician; born about 1287. On the death of his father, in the Welsh wars in 1303, he was made the ward of Piers Gaveston. He served under Edward I. in the Scotch war, in 1306-1307, and during the first 14 years of the reign of Edward II. was employed in Scotland, Ireland, and France, and was appointed lieutenant in Ireland in 1317. Three years later he joined the barons in revolt to banish the king's favorites, the Spensers, but was taken and imprisoned in the Tower. Having escaped to France, he allied himself with Isabella, Queen of Edward II., and the barons who shared her discontent. The queen accepted him as her paramour, and having obtained aid from the Count of Hainault, they came to England in 1326, deposed and imprisoned the king, and governed the kingdom at their will. The young prince was proclaimed (Edward III.); Mortimer was created Earl of March, and took a large share of the estates of the Spensers; the deposed king was shamefully murdered by his orders; and at last Edward, weary of subjection to this insolent usurper, and backed by the public hatred of him, assumed the government. Mortimer was seized at the castle of Nottingham, and hung at Tyburn, Nov. 29, 1330.

MORTLAKE, a parish of Surrey, England, formerly famous for its tapestry works; now malting and brewing are the leading industries. It is also a great boating place, the Oxford and Cambridge race being rowed from Putney to Mortlake. It has associations with Archbishops Anselm and Cranmer, the astrologer, Dr. Dee, and Cromwell, Swift, and Stella.

MORTON, JAMES DOUGLAS, 4th EARL OF, regent of Scotland, younger son of Sir George Douglas; born in Dalkeith, Scotland, in 1530. Having married a daughter of the 3d earl, he received the earldom on the death of his father-in-law, in 1553. He favored the Reformation, and was made Lord High-Chancellor of Scotland in 1563. Three years later he took part in the murder of Rizzio, and fled to England; obtained the queen's pardon, through the influence of Bothwell. Informed of the plot against Darnley, he refused to share in it. He was one of the leading opponents of Bothwell, was again made chancellor, and in 1572 appointed regent. Having made himself odious to the people, he resigned, but afterward resumed office. Charged as accessory to the murder of Darnley, he was tried, condemned, and beheaded by the instrument he himself had introduced into Scotland, June 3, 1581.

MORTON, JAMES MADISON, JR., judge; born in Fall River, Mass., in 1869, he graduated from Harvard with the degree of LL.B. in 1894, and then practiced in his native town. He was a member of the Board of Police at Fall River from 1903 to 1912, and became U. S. District Judge in the latter year by appointment of President Taft. He is president of the Sagamore Manufacturing Co. and trustee of the Bradford Durfee Textile School at Fall River.

MORTON, JULIUS STERLING, American politician; born in Adams, N. Y., in 1832; died in Lake Forest, Ill., in 1902. Graduated from Union College, 1854, then became editor Nebraska City "News" of Nebraska City, Neb. Was member Territorial Legislature, 1856-1857, then, in 1858, its secretary. When Governor Richardson resigned in 1858, he acted as governor. Was a member of President Cleveland's Cabinet (1893-1897) as Secretary of Agriculture. He is especially remembered as the originator of Arbor Day.

MORTON, LEVI PARSONS, an American financier; born in Shoreham, Vt., May 16, 1824. At the age of 16 he worked in a country store. In 1849 he went to Boston, and, though possessed of little capital, was admitted as a partner in a prominent mercantile firm; five years later he removed to New York, and in 1863 established the banking house of Morton, Bliss & Co., with a branch in London under the name of Morton, Rose & Co. In 1878 he was

elected to Congress; re-elected two years later. Appointed minister to France by President Garfield. In 1888 he was elected Vice-President on the ticket headed by Benjamin Harrison, and was governor of New York in 1894-1896. Died in 1920.

MORTON, OLIVER PERRY, an American statesman; born in Wayne co., Ind., Aug. 4, 1823; studied law and was admitted to the bar in 1847; elected governor of Indiana in 1861, and by his loyalty to the government did much to sustain the administration during the trying times of the Civil War. He was elected a United States Senator from Indiana as a Republican in 1867, serving till 1877, and in the latter year was a member of the Electoral Commission. He died in Indianapolis, Ind., Nov. 1, 1877.

MORTON, PAUL, American financier and politician; born in Detroit in 1856; died in New York City in 1911. He was educated in Nebraska public schools, and at the age of 16 entered the employ of the Burlington and Missouri River railroad as office boy. By his abilities he gained rapid promotion, becoming vice-president of the Colorado Fuel & Iron Co., in 1890. In 1904 he was appointed Secretary of the Navy by President Roosevelt, but in 1905 he resigned, to become president of the Equitable Life Assurance Co. of New York City.

MORTON, WILLIAM THOMAS GREEN, an American dental surgeon, and the reputed discoverer of anæsthetics; born in Charlton, Mass., in 1819. In 1840 he commenced the study of dentistry in Baltimore, and began to practice in Boston. In 1844, in the latter city, while engaged in experimental study, he discovered ethereal anæthesia. It was first publicly tested on Oct. 16, 1846, in a surgical operation at the Massachusetts General Hospital. He patented his new anæsthetic under the name of "letheon," offering its advantages free to the charitable institutions of England and the United States. The committee of the French Academy awarded the Montyon prize of $1,250 to be equally divided between Dr. Jackson and Dr. Morton; but the latter refused to receive this joint award, protested against the decision of the Academy, and in 1852 received the Montyon prize medal. He died in New York City, July 15, 1868.

MOSAIC, a term applied to any work which exhibits a representation on a plane surface by the joining together of minute pieces of hard, colored substances, such as marble, glass, or natural stones united by cement (mastic), and serving as floors, walls, and the ornamental coverings of columns. Mosaic work is of Asiatic origin, and is probably referred to in Esther, ch. i: 6, about 519 B. C. It had attained to great excellence in Greece, in the time of Alexander and his successors. The *Opus tesselatum* was a tesselated geometrical pavement. Byzantine mosaics date from the 4th century A. D. The art was revived in Italy by Tafi, Gaddi, Cimabue, and Giotto, who designed mosaics, and introduced a higher style in the 13th century. In the 16th century Titian and Veronese also designed subjects for this art. The practice of copying paintings in mosaics came into vogue in the 17th century; and there is now a workshop in the Vatican. Modern Roman mosaic consists of pieces of artificial enamel, in place of natural stone. Italy at present leads in this art, and St. Peter's in Rome is remarkably rich in specimens of such work.

In pyrotechnics, a device consisting of a surface with diamond-shaped compartments, formed by two series of parallel lines crossing each other. The effect is produced by placing at each intersection four jets of fire which run into the adjoining ones.

MOSASAURUS, in palæontology, the name given by Conybeare to a gigantic marine Saurian, called by Wagler Saurochampsa. It is now made the type of a family, *Mosasauridæ*. *M. camperi* was discovered in the Maestricht chalk in 1780, and was named by Sömmering *Lacerta gigantea*. It came into possession of the French at the fall of Maestricht (1794). Another species, *M. princeps*, is believed to have been 70 feet long.

MOSBY, JOHN SINGLETON, an American military officer; born in Powhatan co., Va., Dec. 6, 1833; was graduated at the University of Virginia, and became a lawyer. On the outbreak of the Civil War, he entered the Confederate service as adjutant of the 1st Virginia Cavalry. In 1862-1865 he was colonel of the "Partisan Rangers," an independent cavalry command that did very effective work in cutting National communications, capturing outposts, etc. After the war he practiced law at Warrentown, Va.; was United States consul at Hong Kong in 1875-1885. He wrote "War Reminiscences" (1887) and "The Dawn of the Real South" (1901). Died in 1916.

MOSCHELES, IGNAZ (mōsh'e-les), a Bohemian musician; born in Prague, May 30, 1794, of Jewish parents; was between 1808 and 1816 the favorite music master

of Vienna. Settling in London in 1825, he taught at the Academy of Music and conducted the philharmonic concerts. After residing in England for 26 years, he became professor in the conservatory of Leipsic. He edited, in English, Schindler's "Life of Beethoven" (1841). He died in Leipsic, March 10, 1870.

MOSCHUS, a Greek bucolic poet, usually designated of Syracuse in Sicily; he flourished about 150 B. C., and wrote in a style of almost painfully finished elegance an epitaph on Bion, a couple of short epics, and minor poems.

MOSCOW (Russian, Moskwá), the second capital (formerly the only capital) of the former Russian empire. It is the chief town of the government of Moscow, and is situated in a highly cultivated district on the Moskwa river, 400 miles S. E. of Petrograd, with which it is in direct communication by rail. It is surrounded by a wall of earthen rampart 26 miles in circuit and of no defensive value; and a considerable portion of the inclosed space is unoccupied by buildings. The quarter known as the Kreml or Kremlin, on a height about 100 feet above the river, forms the center of the town, and contains the principal buildings. It is inclosed by a high stone wall, and contains the old palace of the czars and several other palaces; the Cathedral of the Assumption, founded in 1326, rebuilt in 1472; the Church of the Annunciation, in which the emperors are recrowned; the Cathedral of St. Michael; the Palace of Arms, an immense building occupied by the senate, the treasury, and the arsenal; and the Tower of Ivan Veliki (209 feet), surmounted by a gilded dome, and having at its foot the great Czar Kolokol, or king of bells, 60 feet round the rim, 19 feet high, and weighing upward of 192 tons, the largest in the world. Outside the Kreml the chief building is the Cathedral of St. Vassili, with no less than 20 gilded and painted domes and towers, all of different shapes and sizes. Among the principal educational establishments are the Imperial University, founded in 1755 by the Empress Catharine. It has a rich museum and a library of 200,000 volumes, and is the most important of the Russian universities. Moscow is the first manufacturing city in the empire, and before the World War its industrial and commercial activity had greatly increased. The principal manufactures are textile fabrics, chiefly woolen, cotton, and silk, besides hats, hardware, leather, chemical products, beer, and spirits. From its central position Moscow was the great entrepôt for the internal commerce of the empire. The foundation of the city dates from 1147. It became the capital of Muscovy, and afterward of the whole Russian empire; but was deprived of this honor in 1703, when Petrograd was founded. The principal event in the history of Moscow is the burning of it in 1812 for the purpose of dislodging the French from their winter quarters. The Emperor Nicholas II. and Empress Alexandra observed the ceremony of coronation in the Grand Kremlin in Moscow on May 26, 1896. The city suffered greatly in the revolution of 1917, and under the Soviet rule its population was reduced to less than half that of 1915. In March, 1918, Moscow became again the center of government, in place of Petrograd. See RUSSIA and WORLD WAR. Pop. before the World War about 1,800,000.

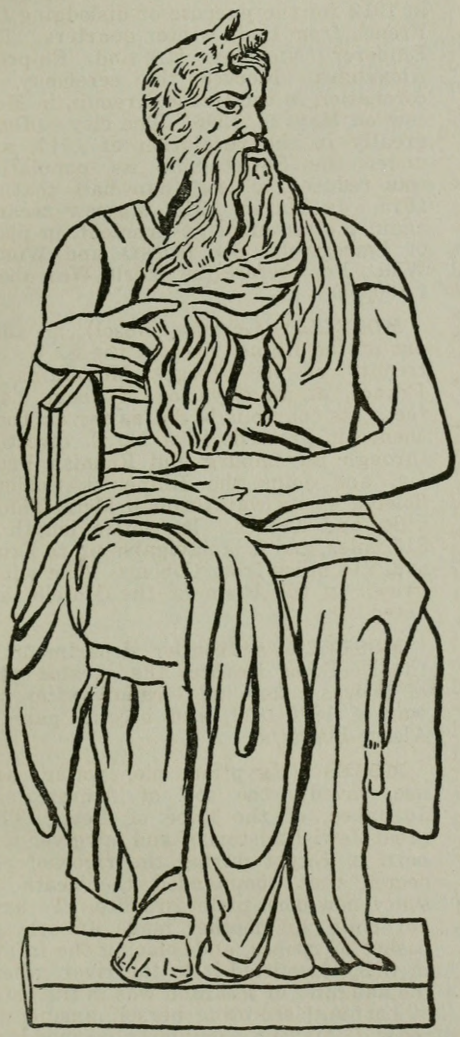
MOSELLE (German, Mosel), an affluent of the Rhine, rises at the S. W. extremity of the Vosges Mountains in France, at an elevation of about 2,412 feet. Its course is N. W. as far as Toul; thence it proceeds in a N. E. direction through Luxemburg and Rhenish Prussia, and joins the Rhine at Coblenz, flowing on its way through Metz, Thionville, and Treves. Its entire length is 315 miles, and it is navigable up to Frouard, 214 miles from Coblenz. The wines grown in the basin of the Moselle are noted.

MOSELLE, a frontier department in the N. E. of France; the greater part of it was taken by Germany after the war of 1870-1871, and became part of Alsace-Lorraine.

MOSES (Egyptian mo, water, and use, saved), the son of Amram and Joahabed, of the tribe of Levi. This great Jewish historian and lawgiver was born in Egypt during the rigor of the decree that commanded the death of every new-born male Israelite. To save her child, his mother made an ark, or basket of rushes, and, placing the infant in this, committed it to the river, where the daughter of Pharaoh was in the habit of bathing; secreting herself among the reeds. Pharaoh's daughter rescued and adopted the child, who was brought up at court and became noted for learning.

In his 40th year, seeing an Egyptian officer ill-treating an Israelite, he killed the task-master and fled into the wilderness, where he pursued the calling of a shepherd for 40 years, marrying the daughter of a priest of the people among whom he had found shelter and protection. While so employed, the Almighty appeared to him in the "burning bush,"

and commanded him to return to Egypt and lead his people from the house of bondage. In obedience to this command, Moses, after much opposition, eventually brought the Israelites out of Egypt, passed the Red Sea, and came within



MOSES

sight of the Promised Land; when, in consequence of the transgressions of the people, they were turned back and condemned for 40 years to wander in the wilderness, till the whole generation of offenders had died. This national migration, known as "The Exodus of the Hebrews," took place about 1300 B. C. Moses was not allowed to enter the land of Canaan. He died in his 120th year, on the confines of Canaan. Moses is considered the author of the first five books of the Old Testament—Genesis, Exodus, Leviticus, Numbers, and Deuteronomy. The Decalogue, given through Moses, and many of the broader provisions of the Mosaic laws form the basis of all present moral and legal codes.

MOSES, GEORGE HIGGINS, United States Senator from New Hampshire, 1918-1924; born in Maine in 1869; graduated from Dartmouth College in 1890. In the same year he became private secretary to the governor of New Hampshire; then, from 1893 to 1906, he was secretary to the State Forestry Commission. He was a delegate to the Republican National Conventions of 1908 and 1916. President Taft appointed Moses Envoy Extraordinary and Minister Plenipotentiary to Greece and Montenegro, a position which he held from 1909 to 1912. Senator Moses was a vigorous opponent of the ratification of the Treaty of Versailles when that document was laid before the Senate.

MOSKWA, a branch of the Volga's tributary, the Oka, rises in a marsh in the E. of Smolensk, flows E. to the city of Moscow, and thence 112 miles S. E. to the Oka. Its total course is 305 miles. It is navigable from its mouth to Moscow, except between November and April, when it is generally frozen, and is connected directly with the Volga by the Moskwa Canal.

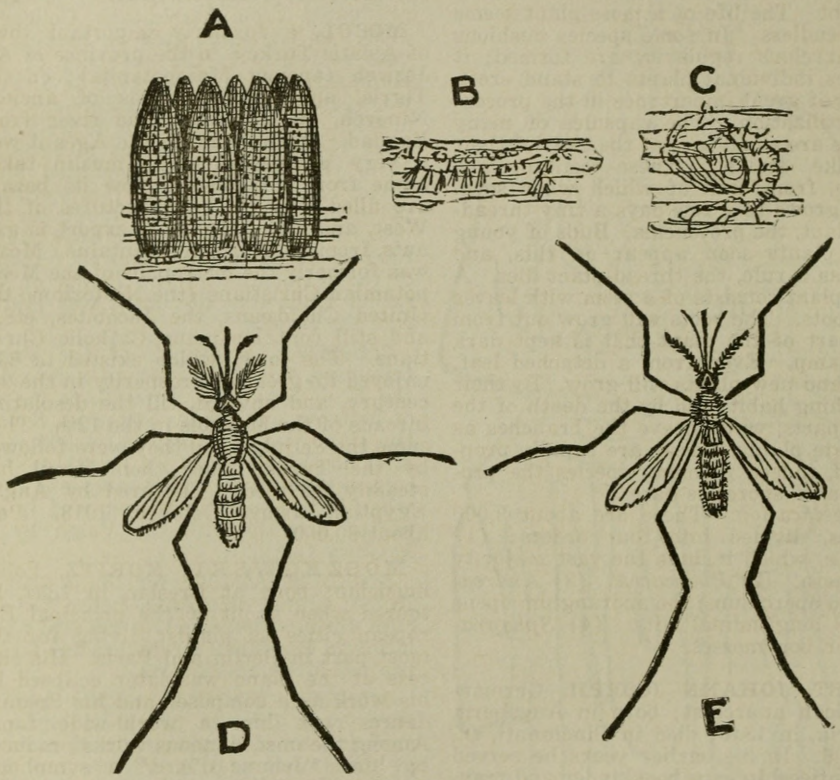
MOSLEM (Arabic, *muslim,* a true believer; plural, *muslimin,* hence the corrupt form, *musulman*), a general appellation in European languages for all who profess Mohammedanism.

MOSLER, HENRY, artist; born in New York City in 1841; he began by studying wood engraving and painting at Cincinnati and in France and Germany, attaining a reputation in Paris, where he lived for years. His first public work was as draughtsman on "The Omnibus," a Cincinnati comic weekly. He won numerous gold medals and similar distinctions here and abroad, among them the cross of the Legion of Honor. His best known works include: "The Return," "Wedding Feast in Brittany," "Rainy Day." He died in 1920.

MOSQUE, a Mohammedan temple or place of worship. A mosque has three essential parts, the Mihrab, or Hall of Prayer, which marks the direction of Mecca; a place for the ablutions, which precede prayer; and finally a large space for the entry and departure of the faithful, for the reading of the Koran and prayers. In this space are the maksura,

or seat of the Caliph; a place for the preservation of the Koran, and finally the mimbar, or kind of pulpit. A further requirement is the minaret, a kind of tower, from which the imam calls the hour of prayer, and of which the larger mosques generally possess four or six.

MOSQUITO, the popular name of various two-winged insects, having a large proboscis, with which they attack man, sucking his blood. They belong chiefly to the genus *Culex*, or at least the family *Culicidæ*. The mosquito of the West Indies and parts of America is *C. mosquito*. Mosquitoes abound also in the tropical parts of the Eastern World, and are troublesome in the Polar regions. The male of the mosquito feeds on plant-juices; it is the female which attacks man. The scientific theory attributing to the bites of mosquitoes the transmission of malaria and yellow fevers has led to experiments by various physicians in the hospital in Havana, Cuba, by Dr. Doty (during the summer of 1901) on Staten Island, N. Y., and by Surgeon-General Gorgas during the excavation of the Panama Canal. See MALARIA.



MOSQUITO

A. Eggs B. Larva C. Pupa D. Male E. Female

MOSQUITO COAST, or **RESERVE**, a maritime tract of Nicaragua, having E. the Caribbean Sea, and S. the river San Juan, which separates it from Costa Rica. The river Segovia, which enters the Caribbean Sea near Cape Gracias a Dios, is the boundary with Honduras. Next the sea, the surface is low and broken by numerous lagoons, but gradually rises toward the interior. Mosquito Coast is inhabited by people of mixed Indian and African race, some 15,000 in all, and by tribes of aboriginal Indians. Chief town, Bluefields; pop. (1917) 4,706. Mosquito Coast was discovered by Columbus in 1502, and appropriated by Spain. From 1655 to 1850 it was an English protectorate, but in 1860 was made over to Nicaragua. After being for some time under the protectorate of Great Britain was reincorporated with Nicaragua by free resolution of the Indians and named the department of Zelaya, Nov. 20, 1894. Recognized by Great Britain in 1905.

MOSSES (*Musci*), a class of small flowerless plants, important in the economy of nature, and of great interest in their life history. They are found in all climates, but are most abundant in damp places. They are included with the liverworts. In mountain regions, the thick felts of moss and deep beds of peat soak up the rain, and so prevent floods from sudden storms, and in dry weather supply the streams through weeks of drought. The life of a moss-plant seems to be endless. In some species cushions of marvelous regularity are formed; it enables individual plants to stand erect, and is of great importance in the process of fertilization. The capsules of many mosses are small sacs at the ends of their hair-like stalks. These contain the spores, from each of which when sown there grows in a few days a tiny thread-like plant, the protonema. Buds of young moss plants soon appear on this, and then, as a rule, the thread-plant dies. A moss plant consists of a stem with leaves and roots. The roots will grow out from any part of the plant that is kept dark and damp. Even from a detached leaf, roots and new plants will grow. By their branching habit, and by the death of the older parts, which leave the branches as separate plants, mosses are rapidly propagated, indeed in many species the production of spores is rare.

Classification.—There are about 3,000 species, divided into four orders: (1) *Bryceæ*, which include the vast majority of genera. (2) *Phascaceæ*. (3) *Andreaceæ*, no operculum; the sporangium opens by 4-8 longitudinal slits. (4) *Sphagnaceæ*, or bog mosses.

MOST, JOHANN JOSEPH, German-American anarchist; born in Augsburg, Bavaria, in 1846; died in Cincinnati, O., in 1906. In his earlier years he served apprenticeship as a bookbinder and traveled over Europe as a journeyman of his trade. In 1874, having meanwhile become a participant in party politics, he became a member of the Reichstag, from Chemnitz, and at the same time assumed editorship of the "Freie Presse" in Berlin, a Socialist publication. His strong leanings toward the anarchist theories of Bakunin caused him to be expelled from the Socialist party in 1879, when he founded the anarchist organ, "Die Freiheit." After serving a term of imprisonment for eulogizing the assassins of the Russian Emperor, Alexander II., he came to the United States in 1882. He immediately re-established his discontinued "Freiheit" in New York City. Henceforward he became known as an anarchist agitator.

MOSTAR, formerly the chief town of Herzegovina, on the Narenta, about 35 miles from the Adriatic, and the terminus of a railway running 27 miles down the valley. It takes its name (Most Star—"old bridge") from a Roman bridge of one arch, 95 feet in span; has numerous mosques, and is the seat of a Roman Catholic and a Greek bishop. Wine is produced, and swords and tobacco manufactured. Pop. about 17,000.

MOSUL, a formerly important town of Asiatic Turkey, in the province of Al-Jezireh (ancient Mesopotamia); on the Tigris, opposite the ruins of ancient Nineveh, 200 miles up the river from Bagdad. During the Middle Ages it was a very prosperous city (muslin takes name from this town); now its bazars are filled with the manufactures of the West, and almost the only export is gall nuts, from the Kurdish mountains. Mosul was formerly the metropolis of the Mesopotamian Christians (the Nestorians, the United Chaldæans, the Jacobites, etc.), and still contains many Catholic Christians. The town, which existed in 636, enjoyed its greatest prosperity in the 9th century, and onward, till the desolating inroads of the Mongols in the 12th. Then came the Seljuks; and they were followed by the Turks; since then Mosul has steadily declined. Captured by Anglo-Egyptian army, October, 1918. Pop. about 80,000.

MOSZKOWSKI, MORITZ, Polish musician; born at Breslau in 1854, he toured when about 20 the principal European cities as pianist, living for the most part in Berlin and Paris. His success at the piano was later eclipsed by his work as a composer and his Spanish dances won him a world-wide fame. Among the miscellaneous works produced by him: "Jeanne d'Arc," a symphonic poem; "Boabdil"; and the incidental music to Grabbe's "Don Juan" and "Faust" are the most notable.

MOTH, the popular name of a numerous and beautiful division of lepidopterous insects (*Heterocera*), readily distinguished from butterflies by their antennæ varying in form to a point instead of terminating in a knob, by their wings being horizontal when resting, and by their being seldom seen on the wing except in the evening or at night (though there are many species of moth that fly in the brightest sunshine, and some butterflies that appear at twilight). Moths are comparatively larger than butterflies and more hairy or downy in character. There are thousands of species, differing greatly in color, form, size, habit and

diet. The giant owl moth of Brazil measures nearly a foot from tip to tip, and there is a gilded species smaller than a pin's head. Certain moths are destitute of tongues and pass through the winged state without food. Among the moths notable for their striking appearance, are the death's head, the luna (having long-tailed wings of light green), the royal walnut moth (exclusively American), the tiger and the sphinx moths.

In their larval state, when they are known as caterpillars, moths are among the worst foes of our gardens, orchards and shade trees. The larva of the white miller is very common in gardens; the tent caterpillar is recognized by the webs it makes in fruit trees, and the larva of the apple moth (developed from eggs deposited in the blossom end of the fruit) is very familiar. The household moths (*Tineæ*) are well known on account of the injury they work among clothes, carpets, furs, etc. One species of moth, the silk worm (*Bombyx Mori*) has long been serviceable to man.

MOTHER-OF-PEARL, in zoölogy and commerce, the internal layer of oyster and other nacreous or pearly shells. In entomology, a moth of the family *Botydæ*.

MOTHERWELL, a city of Scotland in Lanarkshire, 12 miles S. E. of Glasgow. It has important iron and steel works, and there are large deposits of coal in the neighborhood. It has many important industrial establishments. Pop. about 40,000.

MOTIF, a musical term meaning the principal theme on which the movement of a musical composition is constructed, and which, during the movement, is constantly appearing in one or other of the parts, either complete or modified.

MOTION, a movement. In art, the change of place or position which from certain attitudes a figure seems to be making. In law, an application made to a court of justice by the parties to an action or their counsel, to obtain some rule of order of court necessary to the progress of the action. In music: (1) The movement of a single part with reference to intervals taken by it. Conjunct motion takes place when the sounds move by single degrees of the scale, *e. g.*, C, D, E, F; disjunct motion is when they move by skips, *e. g.*, C, F, D, G. (2) The movement of two or more parts with relation to each other. Similar or direct motion is when parts move in the same direction either by single degrees or by skips; contrary motion is when parts move in opposite directions; oblique motion is when one part remains stationary while another moves.

In watches and clocks, the train of wheels immediately concerned in the moving of the hands.

Organic molecular motion, a kind of motion occurring in nearly all the internal processes in organic bodies. It must exist to produce absorption, secretion, etc.

MOTION, LAWS OF, three principles or axioms which were laid down by Sir Isaac Newton:

(1) If a body be started in motion, and if no force act upon it, that body will continue in motion in the same direction, and with the same velocity. Of course this cannot be directly proved by observation, no one being able to start a body in a portion of the universe free from other bodies which will attract it, and if he could start it on in a vacant space, he could not watch its subsequent progress through infinite space and eternity. But the length of time during which tops will spin or finely mounted pendulums will go in the exhausted receiver of an air pump, can be accounted for in no other way than by supposing the truth of the first law of motion.

(2) Change of motion is proportioned to the acting force, and takes place in the direction of the straight line in which the force acts.

(3) To every action there is always an equal and contrary reaction; or, the mutual actions of any two bodies are always equal and oppositely directed in the same straight line.

MOTION STUDY, a method employed by exponents of some of the many efficiency systems, now in existence, in which the motions which a worker makes in performing a routine operation are recorded and studied. A motion study of a process is usually made in conjunction with a time study of the same process. After the motions of several operatives doing the same work are recorded, a study is made and a process which is theoretically the best way of performing the given task is designed and given to the worker to follow. The early studies were made by means of a split second stop-watch, and a recording board. The modern method is to use a high-speed motion-picture camera, and include a large second-indicating clock in the picture. When the film is slowly projected, it gives a complete and easily consulted record of the process.

While great improvements in the methods of doing many processes have been made as a result of motion study,

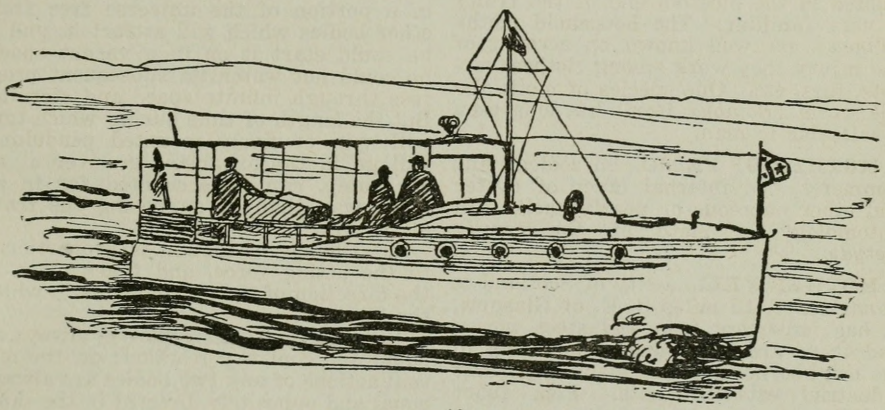
because of the fact that an effort is sometimes made to standardize the human factor, it is a dangerous thing in inexperienced hands, and the ill-advised use of the stop-watch has undoubtedly been the cause of many labor disputes.

MOTLEY, JOHN LOTHROP, an American historian; born in Dorchester, Mass., April 15, 1814; was educated at Harvard University and Göttingen, Germany; published two novels called "Morton's Hope" (1839) and "Merry Mount" (1849). Entered political life as a member of the Massachusetts House of Representatives. He published, after 10 years' labor, "History of the Rise of the Dutch Republic" in 1856; "History of the United Netherlands" (1860-1865); and the "Life and Death of John of Barneveld" (1874). He was minister from the United States to Austria in 1861-1867, and to Great Britain in 1869-1870. He died in Dorchester, England, May 29, 1877.

MOTON, ROBERT RUSSA, American educator; born in Virginia, Aug. 26, 1867. Graduated at Hampton Institute, 1890. Officer of Hampton Institute, 1890-1915. Succeeded Booker T. Washington to the presidency of Tuskegee Institute, Dec. 20, 1915. Secretary Negro School Fund Board since 1908. President of the Negro Organization Society since 1912. Trustee People's Village School, Mt. Meigs, Ala., and of the Home for Colored Girls, Peake, Va. Chairman of the executive committee of the National Negro Business Men's League, 1917. Major of the Hampton Battalion for 10 years. Author "Racial Good Will" (1916).

MOTONO, ICHIRO, BARON, Japanese statesman; born in the ken of Saga in 1862, he was sent as a student to France, and on his return his knowledge of foreign languages and customs gave him a position in the government. He was appointed to a position in the Foreign office in 1890, and in 1896 accompanied as First Secretary the Japanese Ambassador to Russia. In 1898 he became Minister to Belgium, in 1901 Minister to France, and in 1906 Ambassador to Russia. In 1907 he received the title of baron, and later represented Japan at The Hague. He resided in Paris during the World War and died there in 1918.

MOTOR BOAT, a small craft whose means of propulsion is an internal-combustion engine—as distinguished from a sailboat with an auxiliary motor or a steam launch. This class of craft is limited in length to 65 feet, and when



MOTOR BOAT: 40-FT. CRUISER

this size is exceeded, the craft becomes a motor yacht, barge, or tug, or whatever else its type may determine.

About 1885, before the successful adaptation of the internal combustion to boating, various types of expansion engines, such as the Daimler, were run by naphtha and alcohol vapor, and were, as a class, known as naphtha engines. The action of these engines was similar to a steam engine in that expansion, rather than the explosion of the vapor, was utilized. The liquid was heated by a flame under a boiler, and generated into a vapor which was piped to the engine. This type of power plant was lighter in weight, cleaner, and easier to operate than steam, and lighter and more reliable than the then existing internal-combustion engines. Boats in which power was furnished to an electric motor by storage batteries were operated as a novelty at the Chicago World's Fair, and a line of small passenger-boats with this equipment began to operate on Irondequoit

Bay, near Rochester, New York, about 1893, and continued to do so for years, with complete technical and commercial success. However, the perfection and adaption of the internal-combustion engine with its many advantages has forced both the electric motor and the naphtha engine into almost complete disuse as a type of power for motor boats.

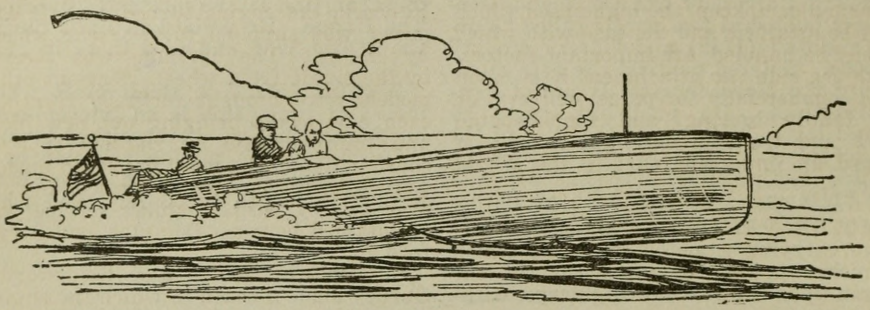
The advantages of the internal-combustion engine are: its comparatively small weight per horse power, its simplicity, reliability, small size, and the fact that it can be readily installed in almost any part of a boat.

In its commercial application, the motor boat has taken the place of the cumbersome steam engine and the unreliable sail for small passenger and freight service, for fishing, towing, lobstering, and oyster dredging.

In the early days of the motor boat, more attention was paid to the means of propulsion than to the lines of the boat itself, and the boats resembled yachts, rowboats, or even ocean liners, but recent years have seen the development of a new branch of naval architecture which has created a small boat which is dry, seaworthy, graceful, and has small resistance to the water. In the pleasure boat field, the development of design has been in three distinct fields—the open boat, the cruiser, and the speed boat.

The early tendency in designing a speed boat was to create a long, narrow, high-powered displacement craft, but of late years this type of craft has been superseded by the hydroplane, a boat which glides over the water rather than through it. Successful experiments with boats of this type date back as far as 1897, when de Lambert operated his steam-powered glider. Peter Cooper Hewitt, W. H. Fauber, Americans, and Enrico Forlanini, Italian, were largely instrumental in the modern hydroplane. There are various types of hydroplanes—the multiplane, the bottom of which is a series of small lifting planes and steps; the monoplane, which has a flat bottom and no step; and the biplane, which has a single step and two planes. The best shape and the number of planes is a subject of experimentation and controversy.

The speed attained by many of these boats is remarkable. The record made at Lake George, New York, in 1917 by the "Whip-poor-will, Jr.," of an average of 69.38 miles per hour for six one-hour trials stood for a long time.



MOTOR BOAT: 30-FT. RUNABOUT

MOTOR CYCLE, a bicycle, the frame of which supports an internal-combustion engine which is used for propulsion. The early models, which followed the lines of the foot-powered bicycle, were uncomfortable and likely to tip because of their higher center of gravity. The first models had the fuel tank over the rear wheel and often the single-cylinder motor was made part of the frame rather than suspended from it. In both the early and modern models, the rear wheel is the drive wheel, and the machine is steered by the front wheel. Flexible belts, shafts, and chains have been used to transmit the power to the drive wheel, the two latter means being most favored at present.

Modern motor-cycle design, which has adapted for its own use almost every practice of automobile design, has evolved a machine with a low center of gravity. The twin-cylinder V-type air-cooled motor with its axis located where the tread shaft of a bicycle would be, is the generally accepted type of design. The chain drive is most used, although there are very successful four-cylinder shaft drive models on the market. The fuel tank—which as a rule has two compartments, one for oil and one for gasoline—is located above the motor, fastened to the top bars of the machine, and feeds the carburetor and the lubricating

system by gravity. The cycle is usually equipped with a magneto for ignition, though the motor-generator battery system has a wide following, and some of the late models are provided with electric self-starters, and a light clutch is generally provided, and even a variable speed gear is not unusual.

While the motor cycle does not give the comfort and protection of the automobile, the advantages of lower first cost and smaller upkeep, the high speed which may be attained, and the ease with which it may be handled, are important factors. With the side car attachment it is much used commercially for parcel delivery, or for family touring, and for dispatch work and transporting light articles it played an important part in the World War.

MOTOR VEHICLE, a wagon or carriage carrying a motor or engine which furnishes power for locomotion of the wagon upon the roads or highways, without a track.

The two general classes into which motor vehicles are divided are those which are designed to move freight, usually called trucks, and those which are used for passenger transportation, which are called cars.

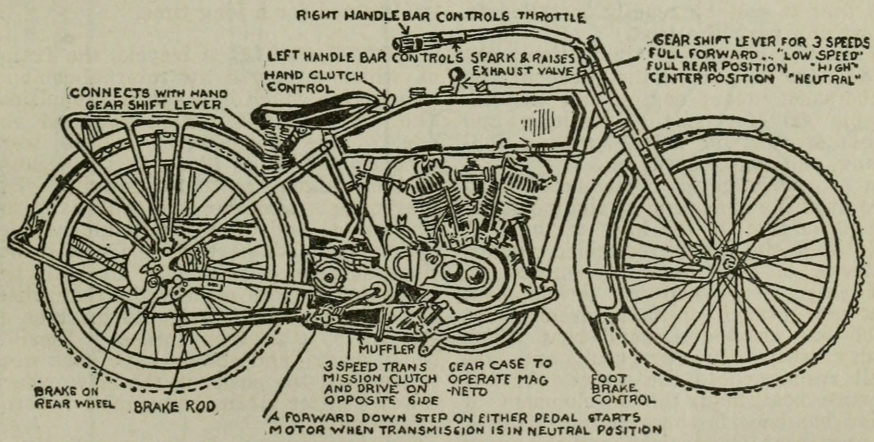


DIAGRAM OF MOTORCYCLE

The early steam engine suggested a mechanically propelled road machine. Sir Isaac Newton proposed such a machine as early as 1680, while comparatively successful models were built in England by Nathan Read in 1790, and by Nicholas James Cugnot in France at the same time. One of Cugnot's early models is still preserved by the French Government.

The early part of the 19th century saw the development of the steam coach in England. The work of Walter Hancock between the years 1824 and 1836 was a great factor in the early development of this type of vehicle. He first perfected a type of boiler lighter for its power than those then existing, and then made a three-wheeled carriage, the engine being located above and directly connected to the single front wheel. In the next model, produced by Hancock, the engine turned a shaft and power was supplied to two rear wheels by chains. The carriage was steered by the single front wheel. Various other models were brought forth by Hancock, each new model bringing out new ideas and improvements on the old type of construction. The more improved models were used for passenger service, and for over twenty weeks regular service was maintained between Islington and Stratford.

Sir Charles Dance and Goldsworthy Gurney made a coach in which the engine was suspended underneath the body of the coach, and the power supplied the driving wheels by a machine not unlike the crank arrangement of a modern locomotive. Gurney developed the coach itself, while the work of Dance was the improvement of the water-tube boiler.

Some of these early models required a crew of three or four men, weighed eight to ten tons, carried eighteen or twenty passengers, and had driving wheels five feet in diameter. Progress at this time was hindered by the enactment of various restraining road regulations. Some years later various types of electric carriages, which carried a storage battery supplying power to a small motor, were operated with more or

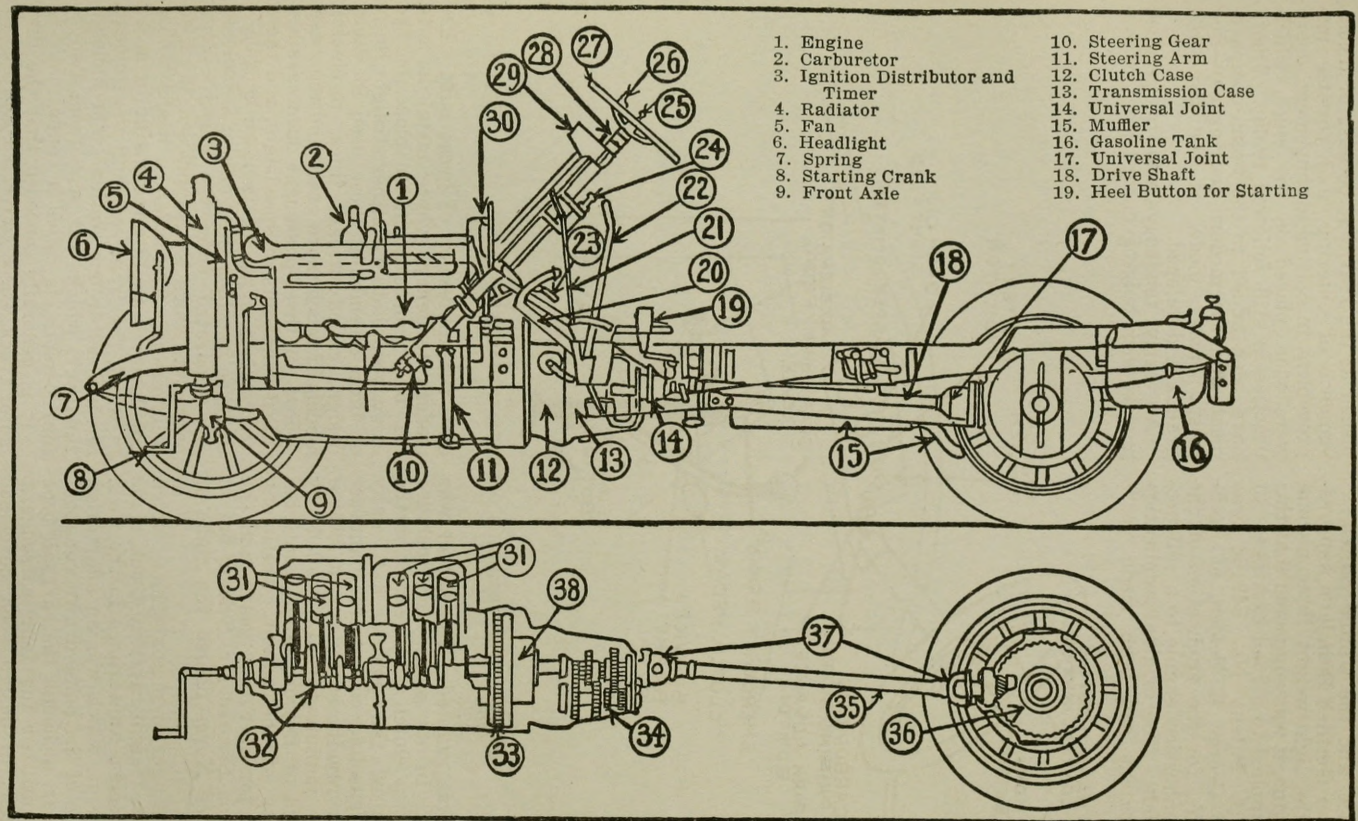
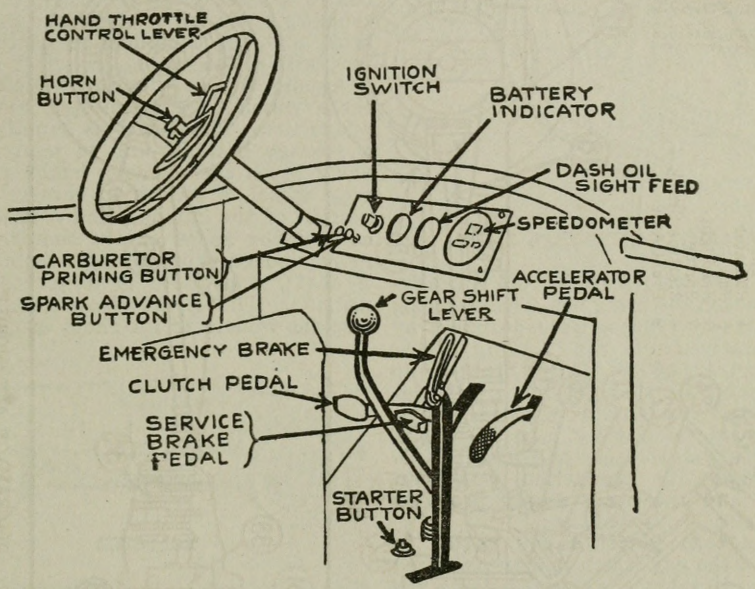


DIAGRAM OF AUTOMOBILE

20. Clutch Pedal
21. Emergency Brake
22. Gear Shifting Lever
23. Accelerator Pedal
24. Hand Air Pump
25. Horn Button
26. Speed Control Levers, Throttle and Spark
27. Steering Wheel
28. Steering Post
29. Switchboard
30. Fuse Block
31. Piston
32. Crank Shaft
33. Flywheel
34. Secondary Shaft and Transmission Gears
35. Drive Shaft
36. Differential Driving Gear
37. Universal Joint
38. Clutch

less success, and lighter types of steam carriages made their appearance in England, France, and the United States.

Soon after Gottlieb Daimler's improvements to the light-weight internal-combustion engine, it was suggested that this power be applied to a road carriage. In 1895 U. S. Patent No. 549160 was granted to George B. Selden, of Rochester, N. Y., for the application of the internal-combustion engine to a self-propelled vehicle. The original application for this patent had been made years



AUTOMOBILE OPERATING DIAGRAM

before it was granted. The patent was very broad in its scope, and included the use of a clutch and gears for the application of the power. For many years all gasoline cars were manufactured on a royalty basis, but in 1904 a group of manufacturers, headed by Henry Ford of Detroit, Mich., contested the validity of the patent. Testimony was taken for over four years, and the first decision favored Mr. Selden, but in 1911 Justice Noyes denied the right of the patent.

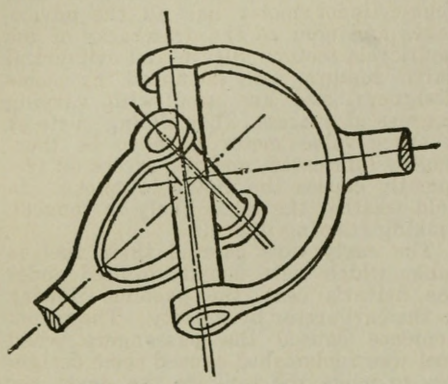
The passenger or motor vehicle which preceded the freight-carrying truck, made its first modern appearance in the form of a runabout, which was an adaptation of the style of the horse-drawn runabout then popular, although the carryall type was soon utilized for four passengers. Advancement in design soon developed the tonneau, in which more protection was given the passengers by means of sides and doors than in the earlier models. The first tonneau doors were placed at the rear, but because of inconvenience of entering, and possible improvement in seating arrangement, doors were soon placed on the sides, which practice is still followed to-day. Doors have been added to the front compartment, and the modern touring car—the most popular model of the day—has gradually developed.

An early tendency was to produce models with bulging curved lines, which gave the impression of great bulk. The modern tendency, where metal is used for body construction in place of the early wood, is to use either straight lines, or lines resembling those used in yacht design, called stream lines, producing models of much more grace and trimness.

Two- or three-passenger open cars are called runabouts or speedsters, and there are various types of inclosed models—the type in which the tonneau is inclosed and separated from the driver's compartment, which is also inclosed, is called a limousine. The sedan, a model whose popularity is rapidly increasing, is a car in which the front seat and the tonneau are inclosed in one section. The inclosed runabout, which will seat from two to four persons, is called a coupé.

It is generally conceded that the first motor truck was a converted touring car used for parcel delivery. Now there is a special model for the transportation

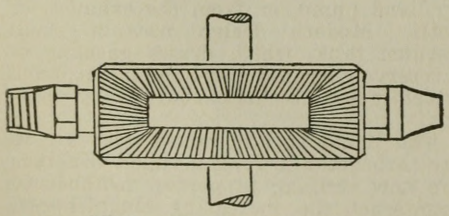
of almost every conceivable type of commodity, from jewelry to pig iron. Special dumping trucks for handling building materials, coal, etc., are used. During the World War the United States Government adopted two standard types of



AUTOMOBILE UNIVERSAL JOINT

truck, a light-weight model and a heavy-weight model, for army use. These trucks, called Liberty trucks, were designed by representatives of the leading truck manufacturers of the United States, who incorporated in their design every desirable and successful feature which had been developed by any individual manufacturer. Because of the standardization, quantity production was soon reached, and the army amply provided with trucks.

The modern pleasure car varies in type from the car which is manufactured on a quantity basis, standard parts for which can be purchased at almost every crossroad, since it is a custom-built car in which the owner decided almost every detail. The mechanical details of the



BEVEL DIFFERENTIAL GEAR

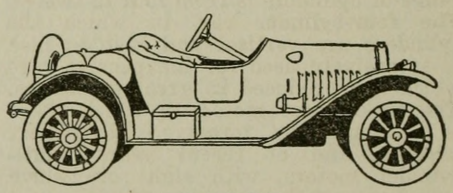
motor vehicle are considered under these headings:

1. The motive power.
2. All other parts of the chassis except the motor—the frame, springs, transmission, and wheels.

In the steam-driven motor vehicle, steam is often generated in a flash boiler, then superheated by a device of some sort, after which it is conducted to a compound reversing engine. The exhaust steam is then frequently condensed and injected again into the boiler. Gasoline vapor is the fuel most frequently used to generate heat.

The big advantage of the steam motor vehicle was the absence of gears which resulted in flexibility of speed and quietness of operation, while its drawbacks were the open flame needed to generate steam, the time required to get up steam before a start could be made, the small cruising radius on one filling of the water tank, and the complication of the fuel-regulating devices.

Among the first motor vehicles were those which used an electric motor for propulsion. The power is supplied from a storage battery, and in many of the early types there was a motor for each rear wheel, a switch to reverse the direction of the current, and a rheostat to control the speed of the motor. In the more modern types a single motor drives a shaft, and there is a geared transmission. The great drawback for the electric vehicle is its short cruising ra-

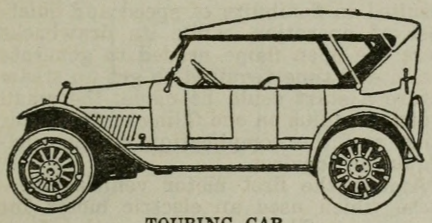


ROADSTER

dius. Although many improvements have been made in storage-battery construction in the last two years, still the only way to increase the radius is to add cells to the storage battery, which of course, increases the weight. In order to recharge the battery a special apparatus is needed. The introduction of the electric self-starter for cars using an internal-combustion engine has done much to nullify the claim that the electric car was the only car for a woman to drive, and the popularity of the electric passenger vehicle has decreased in recent years. The electric truck is successfully used for comparatively short hauls over level pavements, being particularly adapted for city delivery work or for service around dock and terminal systems.

The four-cycle gasoline internal-combustion engine is the standard means of motor-vehicle propulsion to-day. The internal-combustion engine has the advantage of light weight for its power. It is a safe source of power; the motor

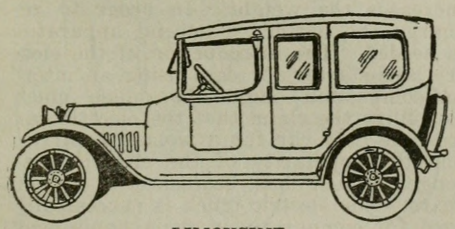
can, as a rule, be easily and quickly started; the fuel is universally obtainable, and the cruising radius is large. The drawbacks for this type of motor are that the motor has a limited speed range at which it may be operated and is non-reversible, consequently gearing in the transmission is necessary. Because of the great heat generated by the explo-



TOURING CAR

sion of gases some cooling system is needed, and the motor must be made to undergo a complete cycle of operation by some external mechanical means before it can be made to start.

The early motors used in motor vehicles were single-cylindered or at most had two cylinders, cast singly. The modern range of cylinders is from four to twelve. The four-cylinder car, in which the cylinders are vertical and cast en bloc is extensively used for inexpensive cars which are produced in great quantities. The six-cylinder motor, in which there is a continuous torque, is extremely popular, and of recent years multi-cylinder motors, with eight or twelve cylinders each, have been used with great success particularly for high-grade cars. In the multicylinder type of motor, the cylinders are usually arranged in two blocks of four or six cylinders each, which operate on a common crank shaft. The question of the proper angle between

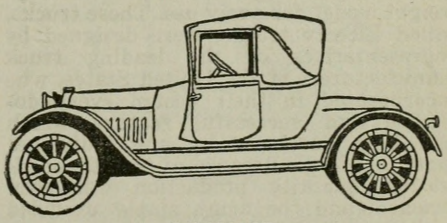


LIMOUSINE

the line of action of the two cylinders is much debated—some engineers use 90 degrees, other designers use 60 degrees, and some as low as 45 degrees, though 90 degrees and 60 degrees are the most common.

The standard type of motor has poppet or lifting valves, and the motor may be L or T head, or, as is frequently the case in modern design, the valves are located in the head of the motor. Some types of modern motors have four valves to the cylinder—two intake and two exhaust valves. One manufacturer of a high-grade car claims that a sixteen-valve four-cylinder motor has all the advantages and none of the drawbacks of the multicycle motor. Sleeve and cylindrical valve motors are advanced by some designers, and are used with varying degrees of success. The sliding parts of a sleeve-valve motor have to be thoroughly lubricated, and the excess oil frequently causes the motor to smoke. In cold weather the oil is likely to congeal, making starting difficult.

The early cars carried their fuel in tanks which were usually located under the driver's seat, the gasoline flowing to the carburetor by gravity. The inconvenience caused the passengers when fuel was replenished caused some designers to move the tank to the dash, but this did not produce sightly lines. With the gravity system it is necessary to



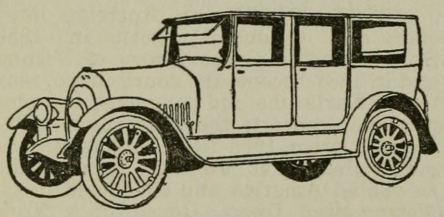
CABRIOLET

place the carburetor low on the motor, and on hills the feed was sometimes interrupted. The next change was to locate the fuel tank at the rear of the frame, and the gasoline was forced to the motor under pressure, supplied either by hand pump, or from the exhaust, or both. Modern design uses a small vacuum tank, which draws gasoline to a reservoir located above the motor, from which it flows to the carburetor by gravity.

The liquid fuel is mixed with air in the carburetor to form a vapor. Engines are now striving to perfect methods to counteract the increasing sluggishness. The carburetor is often heated by exhaust gases or by water jacketing. Hot spots caused by exhaust gases or electrically heated wire gauze are placed in the intake manifold to break up and preheat the gas before it goes into the cylinder. When the gas reaches the cylinder it goes through the four cycles of intake compression, explosion, and rapid expansion and exhaust. The noise of the ex-

plosion is absorbed by an expansion chamber or muffler.

The motor is usually cooled by circulating water around the outside of the cylinders which are jacketed for this purpose. The water is passed from the cylinder to a radiator where it is cooled by air, then to a reservoir and back through the system. The water is kept in circulation either by a rotary pump or by a thermo syphon system. A motor-driven fan is mounted at the rear of the radiator for the purpose of drawing air through the radiator. In many high-grade cars a thermostatic device either cuts off the circulation of the water through the radiator or operates a shutter which prevents the passing of air through the radiator until the motor is heated to its point of highest thermal efficiency. Air-cooling, which would do away with many parts and much weight as well as do away with the possibility of freezing, has not been successfully introduced except by one manufacturer.



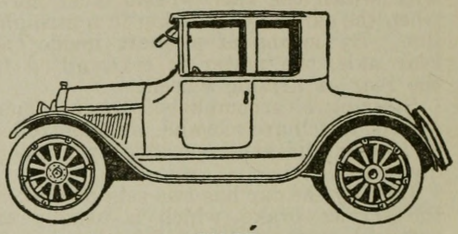
SEDAN

The lubrication system of the motor is either the mechanical or the splash system.

Ignition may be by battery, low or high tension magneto, or by one of the generator-charged battery systems which are very popular at the present day. The difficulty in cranking or starting the gasoline soon led to efforts to overcome this drawback. Heavy springs which were wound by the motor when in operation, various priming devices, some operating with acetylene gas and likely to be dangerous in unexperienced hands, and compressed air systems were used with indifferent success. The introduction of the motor-generator system, which operated as a motor and draws power from a storage battery when the motor is to be started, and then operates as a generator and charges the storage battery, is one of the great advances of modern motor-vehicle engineering, and seems to have satisfactorily solved the problems of starting, lighting, and ignition.

For the car of not extremely high price, the idea in designing the modern motor-vehicle engine is to produce a motor with high efficiency and power, with smaller fuel consumption, and lighter weight. To this end the small bore, long stroke, high-speed motor has been perfected, and is often fitted with aluminum pistons and a counterbalanced crank shaft.

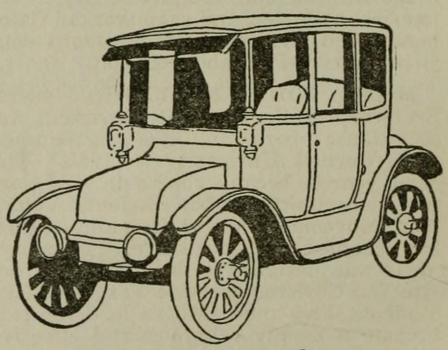
The motor is engaged or disengaged from the driving system by a common



COUPÉ

mechanical device called a clutch, which is held in the engaged position by a spring, and may be disengaged by the operation of a foot pedal. The most common types of clutch are the cone and the multiple disk, either of the dry or oil type. A clutch is necessary in order that the motor may be started without the car moving, and that the gears may be shifted.

With but one possible exception, the selective type of gear system is used. The application of the power generated by the motor is controlled by the use of gears of various sizes, usually ranging from one which gives the motor a great power advantage, without high speed, called low, through an intermediate step, to direct drive, or high gear. A reverse



ELECTRIC COUPÉ

gear is also provided. By disengaging the clutch and moving a hand lever any desired gear can be engaged by the operator, which counteracts the low speed range of efficient operation of this gasoline motor. The gears are inclosed in a housing, and should run in a heavy oil

or a grease. Various types of friction drive have been tried, but without exception were unsuccessful.

The power is often transmitted from the gears through a universal joint to a shaft which operates a gear in the differential at the rear axle. By means of the differential gearing in the rear axle, compensation is made for different speeds with which the rear wheels must move when the car is not running in a straight line. By means of a shaft inside the rear axle, the power is transmitted to the rear or driving wheels.

Steering is accomplished by the front wheels, which are movable, and controlled by a gear and arm, operated by a steering wheel.

Usually the car has two sets of brakes, the service brake, which is usually an external contracting hand brake operating on a drum mounted on rear wheels, and the emergency brake, which is often an internal expanding shoe brake, also operating on the rear wheels, although brakes operating on the transmission are common.

The frame of the car is of wood or steel. Rolled or pressed steel channel bars seem to be held in highest favor, and the various types of springs, such as flat, full, three-quarter, and semi-elliptic and platform are used to improve the riding qualities of the car. The artillery type of wooden wheels is held in highest favor, though wire and sheet or solid metal wheels are favored by some designers and drivers.

MOTRIL, town and port in Granada, Spain, 32 miles S. E. of Granada. Its industries include foundries, sugar refineries, potteries, and soap works. Calahonda and roadstead of Baradero constitute port. Pop. about 20,000.

MOTT, JOHN RALEIGH, General Secretary of Young Men's Christian Associations; born in 1865, graduated from Cornell University in 1888. The same year he became chairman of the executive committee of the Students' Volunteer Movement, an undertaking which has occupied most of his life. This movement was designed to stimulate the desire for Christian service among college students, and under Mott's leadership it became a deeply religious and effective force. In 1895 Mott became general secretary of the World's Student Christian Federation. Mott has always been deeply interested in the foreign missionary work of the Y. M. C. A. and this made him a figure of national and international importance. In August, 1916, President Wilson appointed him on the Joint Commission to settle the differences between the United States and Mexico, and the next year the President made him a member of the mission to Russia which was headed by Elihu Root. During the war with Germany Mott's energies were given to directing the great work of the Y. M. C. A. for the help of the American army and navy.

MOTT, LUCRETIA, an American reformer; born in Nantucket, Mass., Jan. 3, 1793. Early became interested in the movement against slavery. In 1818 she joined the Friends. In 1833 she assisted in the formation of the American Anti-Slavery Society, and in 1840 went to London as its delegate to the World's Anti-Slavery Convention. She was one of the four promoters of the Woman's Rights Convention in the United States. She died in Philadelphia, Pa., Nov. 11, 1880.

MOTTE, FORT, a Revolutionary fort, on the Congaree river, S. C., about 33 miles below Columbia.

MOTTL, FELIX, an Austrian musician and conductor; born in 1856. Studied in the Conservatory of Vienna, and in 1881 became the court chapel master at Karlsruhe and conducted the philharmonic concerts there for the next ten years. From 1903-1911 he was general music director at Munich. In 1903-1904 he visited America and conducted in the Metropolitan Opera House, New York. During his lifetime in addition to numerous single compositions he wrote two operas, "Agnes Bernauer" (1880) and "Fürst und Sänger" (1892). Died in 1911.

MOUFLON, MOUFFLON, or **MUFFLON**, a wild species of sheep, formerly common in Spain, now restricted to Corsica and Sardinia. It is about the size of a common sheep, brownish-gray in color, with a dark dorsal streak, and a varying amount of white on the face and legs. Horns are present in the males only, and the tail is very short.

MOULINS, a town in France, capital of the department of Allier, on the Allier, over which is a bridge of 13 arches, built 1750-1763. The principal public buildings are the cathedral (Notre Dame), never completed, the magnificent mausoleum of Duke Henry of Montmorency, and ruins of a castle belonging to the Dukes of Bourbon. It is a suffragan bishopric of Sens. Manufactures, machinery for sawmills, straw and felt hats, and cabinet making. Marshal Villars, and the Duke of Berwick, natural sons of James II., were born here. Pop. about 20,000.

MOULTING, a name for the process by which birds lose some of their feathers, crustaceans cast their cuticular shells, or young insects get rid of their outer husk in metamorphosis. The shedding of the hair in mammals and the sloughing of snakes, etc., are also analogous.

MOULTON, RICHARD GREEN, born in Preston, England, in 1849, he attained the London University B. A. and the Cambridge M. A. and in 1891 the University of Pennsylvania Ph. D. In 1892 he became professor in English at the University of Chicago, and in 1901 became head of the department of general literature. He published his first work, "Shakespeare as a Dramatic Artist," in 1885. His later works include: "The Ancient Classical Drama"; "Four Years of Novel Reading"; "The Literary Study of the Bible"; "Moral System of Shakespeare"; "World Literature and Its Place in General Education"; "The Modern Study of Literature." Also edited the "Modern Reader's Bible" in 21 vols.

MOULTRIE, a city of Georgia, the county-seat of Colquitt co. It is on the Atlanta, Birmingham and Atlantic, Flint River and Northeastern, Georgia and Florida, and other railroads. It is the center of a commercial and manufacturing community, and has meat-packing plants, mattress factories, fertilizer plants, lumber mills, and cotton mills. There is a library and handsome government building. Pop. (1910) 3,349; (1920) 6,789.

MOULTRIE, FORT, a defensive work on Sullivan's Island, at the mouth of Charleston Harbor, S. C., celebrated for the repulse of a British squadron commanded by Sir Peter Parker, June 28, 1776.

MOULTRIE, WILLIAM, an American military officer; born in South Carolina, in 1731. He was of Scotch descent, his parents emigrating to South Carolina early in the 18th century. In 1761 he commenced his career as captain in a militia regiment, raised for the defense of the frontier against the Cherokees, rendering important service. He was elected to the provincial congress in 1775, and appointed colonel of the 2d South Carolina regiment. In 1776 he was designated to construct a fort on Sullivan's Island, at the mouth of Charleston harbor. The fort, which had 26 guns and 435 men, and was commanded by Moultrie, hastily built of palmetto logs, was found to resist the cannon balls perfectly. The British fleet attacked the fort before its completion, but were repulsed with great slaughter. Moultrie was made brigadier of the Continental forces, and distinguished himself by the repulse of the British advance on Charleston, in 1779. In the spring of 1780 Charleston was again attacked, and Moultrie, second in command, shared in the capitulation of the American forces. He remained a prisoner two years, being exchanged in 1782, and was promoted a Major-General by Congress. In 1785 he was elected governor of South Carolina, and again in 1794, after which he retired to private life. He was the author of "Memoirs of the Revolution." He died in Charleston, S. C., Sept. 27, 1805.

MOUND, a ball or globe used as the sign of sovereign authority and majesty, and forming part of the regalia of an emperor or king. It is surmounted by a cross and encircled with a horizontal band, from the upper edge of which springs a semicircular band, both enriched with precious stones.

MOUND BIRDS (*Megapodidæ*), a family of gallinaceous birds remarkable for the large mounds which they build as incubators for the eggs. They are natives of Australasia and of the islands in the Eastern Archipelago and Pacific. The Australian megapodes (*Megapodius tumulus*), about the size of common fowls, build mounds of leaves, vegetable refuse, and soil, and add to them year after year till they become immense structures.

MOUND BUILDERS, the name given to a prehistoric race, formerly inhabiting the Ohio and Mississippi valleys, who have left some very remarkable earthworks as their only memorials. The best known group of mounds is near Newark, O., and consists of "elaborate earthworks, in the form of a circle, octagon, and square, inclosing an area of about 4 square miles, on the upper terrace between two branches of the Licking river. Scattered over the same plain, and crowning the neighboring hills, are numerous tumuli or mounds, evidently erected by the same people that built the larger works." The human remains found in these mounds are usually so much decayed as to preclude the recovery of a single bone entire.

MOUNDSVILLE, a city of West Virginia, the county-seat of Marshall co. It is situated about 11 miles S. of Wheeling, on the Ohio river and on the Baltimore and Ohio railroad. It is the seat of the State Prison and contains a court house, Federal building, and Reynolds Memorial Hospital. Within its limits is one of the famous mounds of prehistoric origin. The city is the center of important agri-

cultural and mining region. Its manufactures include glass, lumber, bricks, clothing, foundry products, leather, etc. Pop. (1910) 8,918; (1920) 10,669.

MOUNET-SULLY, JEAN, a French tragic actor, born at Bergerac, Feb. 27, 1841. He studied under Bressant in the Conservatoire in 1862, and in 1868 made his début as King Lear at the Odéon, supported by Madame Bernhardt. In 1872 he made a striking success in "Andromaque" at the Théâtre Français, became sociétaire of this theater in 1874, and at the time of his death, in 1916, was the dean of the company. He toured the United States and Europe, and wrote several plays, notably "La vieillesse de Don Juan," in verse, produced at the Odéon in 1906.

MOUNT STEPHEN, BARON GEORGE STEPHEN, born in Dufftown, Scotland, in 1829, son of William Stephen. He went to Canada in 1850 and succeeded in the dry-goods business, and became successively director, vice-president, and president of the Bank of Montreal. He also turned his attention to railroad development, and co-operated in completing the Canadian Pacific railway, of which he was the head from 1881 till 1888. He was made a baronet in 1886 and a baron in 1891. In 1887 he gave $500,000 toward the Royal Victoria Hospital, Montreal.

MOUNTAIN, a large or very high hill; a large mass of earth rising to a great height above the level of the adjacent land; a high elevation or prominence upon the earth's surface; a high mount.

In geography, mountains usually exist in chains, the highest being the Himalayas. Parallel to a leading mountain chain there are in some cases two others of inferior elevation, one on each side.

Sir Charles Lyell proved that every great mountain is the result, not of one upheaval, but of many. The composition of the different parts of a mountain regulates its form; trappean rocks, for instance, tending to make one or more table lands with precipitous sides, and granite a rounded top.

MOUNTAIN ASH, *Pyrus aucuparia*, a European tree, 10 to 30 feet high, with pinnate leaves, corymbose compound cymes with cream-white flowers, and scarlet berries with yellow flesh. Wild in woods, on hillsides, chiefly in mountainous districts, and cultivated in gardens. Called also the Rowan tree. Also, *Pyrus* (*sorbus*) *americana*, an American tree, bearing beautiful red berries.

MOUNTAIN LION. See PUMA.

MOUNT CARMEL, a city of Illinois, the county-seat of Wabash co. Situated on the Wabash river and on the Cleveland, Cincinnati, Chicago and St. Louis, and the Southern railroads. It is about 35 miles N. W. of Evansville. The city has a court house, excellent public library, and a high school There are railroad shops and manufactories of ice, lumber, flour, etc. The city is the center of an important agricultural region. Pop. (1910) 6,934; (1920) 7,456.

MOUNT CARMEL, a borough in Northumberland co., Pa.; on the Philadelphia and Reading, the Lehigh Valley, and the Northern Central railroads. It contains a National bank, and daily and weekly newspapers. In the vicinity are several extensive anthracite coal mines. Pop. (1910) 17,532; (1920) 17,469.

MOUNT CLEMENS, a city of Michigan, the county-seat of Macomb co., 20 miles N. E. of Detroit. It is on the Clinton river and on the Grand Trunk railroad. It has important mineral springs, and for this reason, and on account of its beautiful situation, has become in recent years an important summer resort. The city has a library and several large hotels. Its chief industries are beet sugar, carriages, wagons, automobiles, typewriters, and agricultural implements. Pop. (1910) 7,707; (1920) 9,488.

MOUNT DESERT, a mountainous island in the Atlantic, belonging to Hancock co., Me., off the coast; was settled by the French in 1608. It is 14 miles long and 7 miles wide. Soames's Sound divides it nearly in two. Bar Harbor, Northeast and Southwest Harbors, Soamesville, Seal Cove, and East Eden are the villages. The island abounds in beautiful little lakes, and is a favorite summer resort. Pop. about 2,000.

MOUNT HOLLY, a town in New Jersey, the county-seat of Burlington co., about 20 miles E. of Philadelphia. It is situated on Rancocas creek and on the Pennsylvania railroad. It contains a Children's Home, the Burlington County Hospital, and the Burlington County Lyceum. Its chief industrial products are shoes, machine-shop products, foundry products, leather goods, etc. Pop. (1910) 5,652; (1920) 5,945.

MOUNT HOLYOKE COLLEGE, an educational, non-sectarian institution for women in South Hadley, Mass.; founded in 1837; reported at the close of 1919: Professors and instructors, 133; students, 815; volumes in the library, 72,352; productive funds, $1,425,640; in-

come, $70,028; number of graduates, 3,870; president, Miss Mary Emma Woolley, Litt. D., L. H. D., LL. D.

MOUNT OLIVER, a suburb of the city of Pittsburgh in Allegheny co., Pa. Pop. (1910) 4,231; (1920) 5,575.

MOUNT PLEASANT, a town of New York in Westchester co., about 25 miles N. of New York City. It is situated on the Hudson river and on the New York Central and Hudson River railroad. The town includes the villages of North Tarrytown, Pleasantville, Sherman Park, and a portion of Briar Cliff Manor. Within its limits are the Westchester County Hospital, St. Joseph's Normal School, and other important educational institutions and hospitals. There are important manufacturing industries, including automobiles.

MOUNT PLEASANT, a borough of Pennsylvania in Westmoreland co., about 70 miles S. W. of Pittsburgh. It is situated on the Baltimore and Ohio and the Pennsylvania railroads. It contains the Western Pennsylvania Classical and Scientific Institute and is the center of important coke-making industry. There are also manufactories of flour, iron, foundry products, glass, etc. Pop. (1910) 5,812; (1920) 5,862.

MOUNT RUWENZORI, a mountain in central Africa. It is on the boundary between the Belgian Congo and British East Africa. It includes several ridges and peaks. It was discovered in 1888 by Stanley. The Duke of the Abruzzi, in 1906, climbed the two highest peaks, which he called respectively Alexandra and Margherita. The first is 16,750 feet and the second 16,816 feet high.

MOUNT UNION COLLEGE, a coeducational institution in Alliance, O.; founded in 1846 under the auspices of the Methodist Episcopal Church; reported at the close of 1919. Professors and instructors, 20; students, 334; president, W. H. McMaster, D. D., A. M.

MOUNT VERNON, a city of Illinois, the county-seat of Jefferson co., about 75 miles E. of St. Louis, Mo. It is situated on the Louisville and Nashville, the Chicago and Eastern Illinois, the Southern, and the Wabash, Chester, and Western railroads. The city contains a court house, a library, and a park. Its chief industries are coal mining, agriculture, car and machine-shop products, glass, hosiery, etc. Pop. (1910) 8,007; (1920) 9,815.

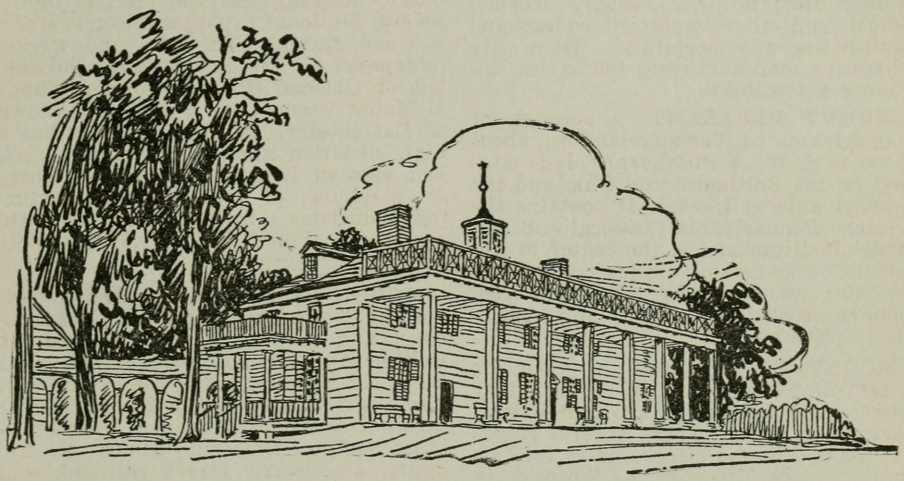
MOUNT VERNON, a city of Indiana, the county-seat of Posey co., about 20 miles W. of Evansville. It is situated on the Ohio river and on the Louisville and Nashville and the Chicago and Eastern railroads. It has a court house, a library, and manufactories of flour, lumber, engines, foundry and machine-shop products. It is the center of an important agricultural region. Pop. (1910) 5,563; (1920) 5,284.

MOUNT VERNON, a city in Westchester co., N. Y.; on the Bronx river and on the New York Central and Hudson River, the New York, New Haven, and Hartford, and the New York, Westchester and Boston railroads, 13 miles N. of New York. Here are a public library, hospital, gas and electric lights, several National banks, an electric street railroad system, and daily and weekly newspapers. The city includes the suburb of Chester Hill, the former village of Mount Vernon, and a part of the town of Eastchester. Most of the city has a high elevation and commands an excellent view of Long Island Sound. There are a number of important manufacturing industries. It has many beautiful residences. Pop. (1910) 30,919; (1920) 42,726.

MOUNT VERNON, a city and county-seat of Knox co., O., on the Kokosing river, and on the Pennsylvania and the Baltimore and Ohio railroads; 25 miles N. W. of Newark. It is the center of a large agricultural region from which it draws a considerable trade. Here are a court house, National banks, electric lights, an electric street railroad, and several daily newspapers. It has a locomotive works, furnace foundry, Corliss engine works, woolen, flax, twine, flour and saw mills, and manufactories of leather, linseed oil, furniture, etc. Pop. (1910) 9,087; (1920) 9,237.

MOUNT VERNON, the estate of President Washington, in Fairfax co., Va., on the right bank of the Potomac river; 15 miles S. of Washington. The dwelling is a wooden mansion, 96 feet long, erected on a bluff 200 feet above the river, and commanding an excellent view. The estate, originally named Hunting Creek and comprising 800 acres, was inherited by Washington in 1752 from his brother Lawrence, who had changed the name in honor of his former commander, Admiral Vernon of the British navy. The central part of the house was built by Lawrence, and the wings were added by George. The house and 200 acres of land around it were bought by the Mount Vernon Ladies' Association in 1859 for $200,000, raised in great part through the exertions of Edward Everett, and have been restored as

nearly as possible to their condition in George Washington's lifetime. In ascending from the river to the house the visitor passes the plain, brick tomb of Washington, containing, behind an iron grating, two sarcophagi with the remains of the general and his wife, Martha. The home contains an abundance of interesting relics of which, perhaps, the key of the French Bastille is the most notable. The room in which Washington died is at the S. end of the first floor, and Mrs. Washington died in the one immediately above it. The tiles in the piazza were brought from the Isle of Wight. The coach house contains Washington's carriage and in the garden are trees planted by his hands.



MOUNT VERNON

MOUNT WASHINGTON, a peak of the White Mountains, in Coos co., N. H.; about 85 miles N. by E. of Concord; height, 6,285 feet above sea-level, being not only the culmination of the White Mountains, but the highest land in New England. The summit is reached by a railroad.

MT. WILSON SOLAR OBSERVATORY, near Pasadena, Cal., at an elevation of 5,886 feet. It was built in 1904, as an expedition from the Yerkes Observatory, by the Carnegie Foundation, and contains a Snow horizontal telescope lent by Yerkes Observatory. Prof. George E. Hale, who was instrumental in having the observatory built, is the director. The clear atmosphere of Mt. Wilson makes it a very desirable spot for solar observations.

MOUNTED SERVICE SCHOOL, military college at Fort Riley, Kan., consisting of schools of equitation, farriers and horseshoers, bakers and cooks. The courses number four for the first, two for the second, two for the third. Only the School of Equitation gives tuition to officers. The staff consists of a commandant, instructors, detachment, and student officers and enlisted men.

MOUSE, a popular name for the smaller species of the genus *Mus*, the larger ones being called rats. The common mouse is dusky-gray above, ashy underneath; the tail being about as long as the body. The field mouse, which is reddish-gray above, white underneath, is larger; and has the tail shorter than the body. The harvest mouse is very small, the body being colored above like a squirrel; beneath it is white, with a line between the colors. By shrew mouse is meant the common shrew, *sorex vulgaris;* the short-tailed field mouse is *arvicola agrestis.*

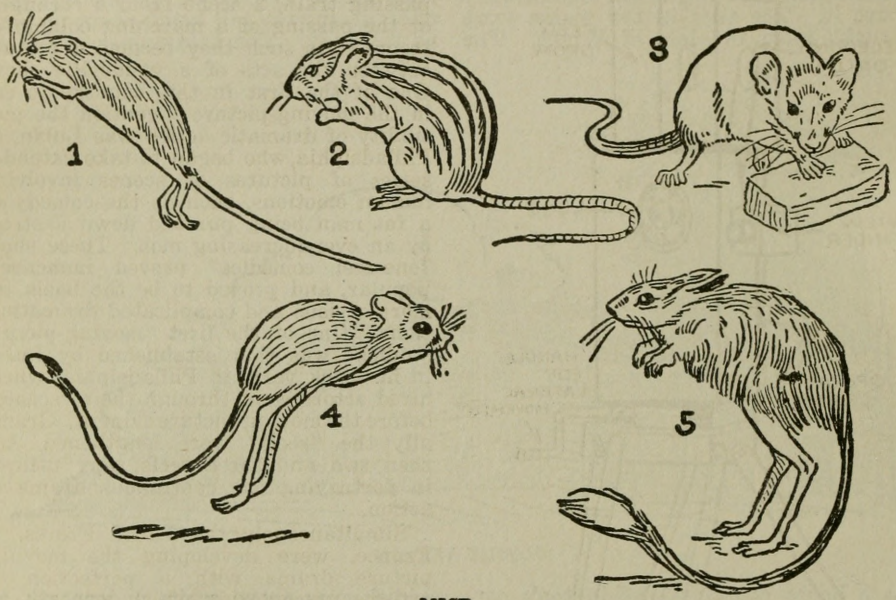
MOUTH, the cavity containing the organs of taste, mastication, and insalivation. In fortifications, the outer or widest part of an embrasure; the narrow part being the neck. Also the part of a trench most remote from the besieged place.

MOVING PICTURES, also known as cinema and biograph pictures, an invention whereby a rapid succession of photographs, thrown on a screen, each succeeding picture presenting a slight degree of progress in physical action over the preceding one, produces the optical delusion of actual movement. So highly developed has this process become that dramatic stories, or narratives, may be

told solely through action, with the result that moving pictures have become the most popular means of this class of amusement in practically all countries.

The invention is the result of numerous experiments made by photographers, suggested to them by the old-fashioned zoetrope, which was popular before and after 1860, whereby pictures of figures in various stages of action, printed on strips of paper, whirled about in a machine, which enabled observation through slits, gave the delusion of action. The first experiments with photographs that gave practical results were made by an American, Muybridge, in 1877, who photographed horses in action by means of the newly developed instantaneous process. The invention of the ribbon films, in 1880, constituted another step in advance toward the present state of perfection. The first utilization of the invention for amusement was made by Thomas Edison, in 1894, in the kinetoscope, whereby positives on a film, about the size of postage stamps, were passed before a light and gave the illusion of sustained action. The first moving pictures projected to a large size on screens, on the principle of the magic lantern, were perfected by Lumière, in France, shortly after the appearance of Edison's kinetoscope. Since then there has been continuous improvement, not only in the mechanical development of the invention, but in its utilization in the field of amusements and pictorial education.

As now operated, the actual pictures are photographic positives printed on films, made of a substance resembling celluloid. The film is one and three-sixteenths of an inch in width, and may be a thousand feet in length. These strips are passed before a powerful light within a machine, on the same principle as the old magic lantern, which projects them on a white screen, where they are enlarged to much over life size, if necessary. The film passes before the light at a rate of speed averaging from 60 to 80 feet a minute, depending on the rapidity of action desired for the figures on the screen.



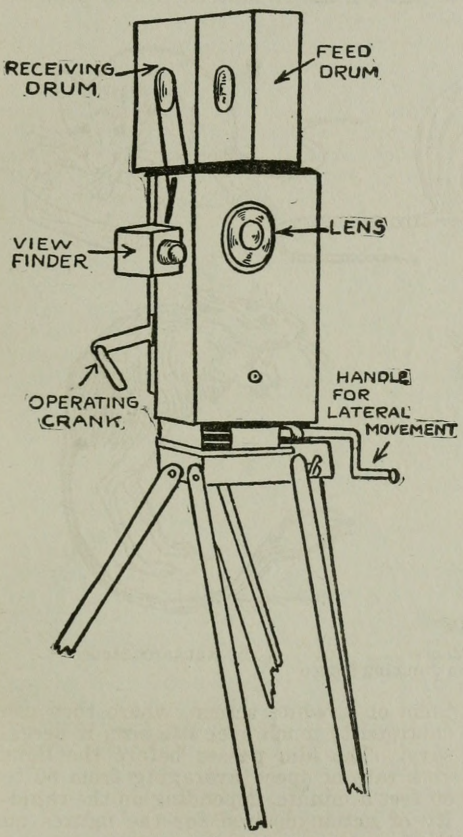
MICE

1. American Jumping Mouse
2. Striped African Mouse
3. House Mouse
4. Egyptian Jumping Mouse
5. Kangaroo Mouse

Were this film to pass before the light continuously, the effect on the screen, as was observed in the early experiments, would be an indistinguishable blur. To produce the desired results, it is necessary that each picture be retained on the screen, and there held stationary, for the slightest fraction of a second. During the interval between the presentation of one picture and the succeeding one, the screen must be dark. But so slight is this interval that it is not obvious to human perception, as now operated, though formerly the action was slow enough to produce the effect of observing

a landscape from a train window passing rapidly along a picket fence.

It was the necessity of perfecting a mechanism to accomplish the above results that delayed the present perfection of the moving-picture machine. This has finally been accomplished by means of a wheel, resembling the paddle wheel of a stern-wheel river boat, which catches the films along the edges by means of ratchets, or spikes, catching in holes



MOVING-PICTURE CAMERA

along the margins of the film. The wheel, revolving by rapid jerks, causes each picture to pause just the desired interval. Sixteen separate pictures are presented during the space of one second.

The moving-picture camera is constructed on a similar principle, the sensitized film on which the negatives are made being exposed during the fraction of a second required for an instantaneous photograph. The rapidity with which this is done may be regulated by the photographer, who, by turning a crank, governs the action of the camera. Where slow movement is desired, the mechanism is slowly turned, with the result that fewer pictures are taken to represent a given motion. Where quick action is involved, such as the galloping of a horse or the leaping of a human figure in a dramatic scene, the camera is turned correspondingly faster, so that a greater number of impressions may be registered on the film.

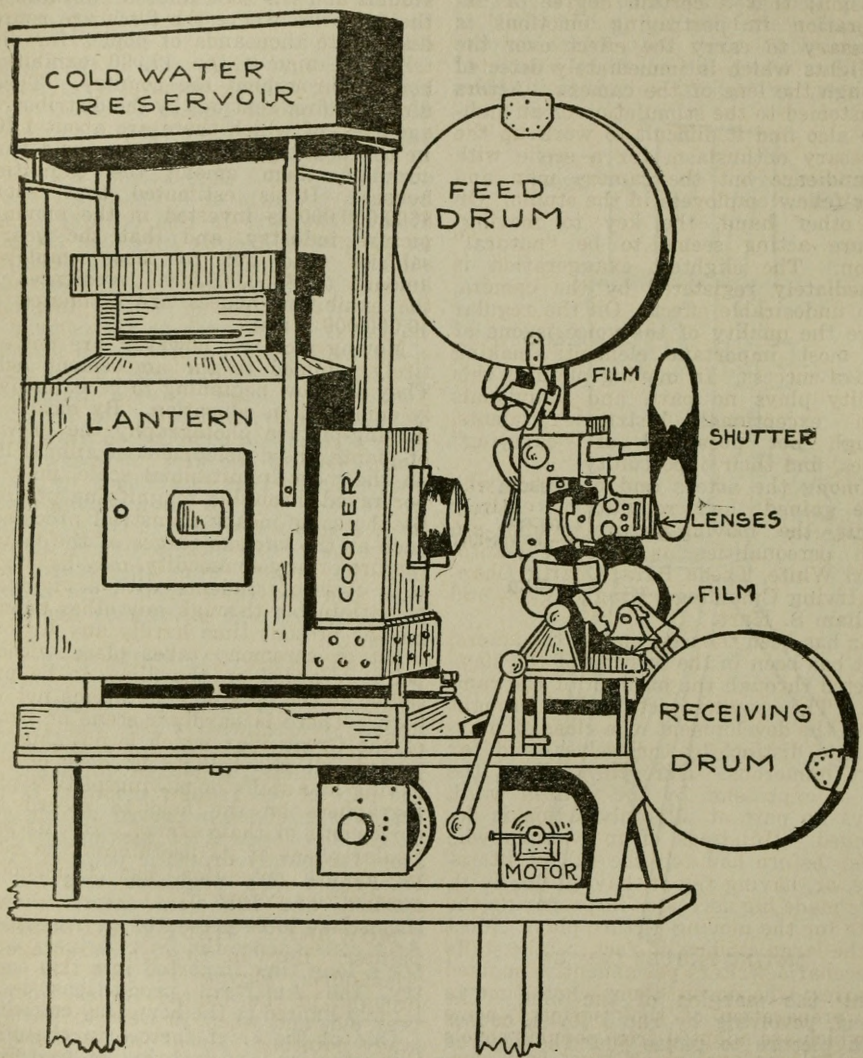
In their first appearance in the amusement field, moving pictures represented only such minor phases of action as a passing train, a scene from a cockfight, or the passing of a marching column of troops. As such they became a feature between the acts of a vaudeville show. One of the first in this country to see in the moving-picture invention the possibility of dramatic action was Lubin, of Philadelphia, who began to take extended series of pictures of scenes involving human emotions, such as the comedy of a fat man being pursued down a street by an ever-increasing mob. These short "one-reel comedies" proved immensely popular, and proved to be the basis for more serious and complicated dramatizations. One of the first "moving-picture studios" was that established by Lubin in his back yard, in Philadelphia, where hired actors went through their "scenes" before the moving-picture camera. Gradually the "reels" were lengthened, and then two and three reels were utilized in portraying one continuous drama of action.

Simultaneously the Pathe Frères, in France, were developing the moving-picture drama with a perfection of artistic presentation which was not attained in this country for many years. In this country a violent prejudice on the part of the regular members of the dramatic profession proved an obstacle to the development of moving pictures from the purely dramatic point of view. In France this prejudice was not so marked, and first-class actors allowed themselves to be presented on the screen. As a consequence the finer pictures were for a long time imported into this country, the American productions being largely limited to the horseplay comedies.

One of the chief factors in changing this situation, and in bringing American moving pictures to the front, has been David W. Griffith, who may be said to have introduced the spectacular picture, produced at tremendous cost, the best example of which is his "Birth of a Nation," in which thousands of actors and supers are employed in creating the scenes of the play. In this remarkable production over two hundred thousand feet of film was used in reproducing the scenes portrayed by the army of actors

and supers under the direction of Mr. Griffith. The great success of "The Birth of a Nation" resulted in the later production of a number of similar picture dramas on a like scale of size and grandeur, among which may be mentioned "Intolerance" and "The Fall of Babylon."

In the artistic presentation of dramatic pictures portraying deep human emotions, however, the French producers and directors were for a long time in the lead. Within recent years American producing firms have attracted the French directors to their employ in this country, with the result that now American pictures equal the best in dramatic quality, though directed by such French artists in this line as Turneur, Kappalani, and Shotaurd. For some years past the old prejudice against "pictures" on the part of American actors and actresses has vanished, and now the leaders in the profession are frequently featured in the leading rôles of the higher class of picture dramas.



MOVING-PICTURE PROJECTOR

Moving pictures, however, seem to demand peculiar talents of their own on the part of the actors who perform before the camera. Among the most popu-

lar "movie stars" are few who have first made their reputations on what is known as the "legitimate" stage. The actor trained on the stage seldom becomes a favorite on the screen. The truth seems to be that the stage limits dramatic expression; that a certain degree of exaggeration in portraying emotions is necessary to carry the effect over the footlights which is immediately detected through the lens of the camera. Actors accustomed to the stimulation of an audience also find it difficult to work up the necessary enthusiasm for a scene with no audience but the camera man and their fellow employees in the studio. On the other hand, the key to moving-picture acting seems to be "natural" action. The slightest exaggeration is immediately registered by the camera, with undesirable effect. On the regular stage the quality of the voice is one of the most important elements making toward success. In moving pictures this quality plays no part, and individuals with exceptional histrionic talents, though not possessed of "carrying" voices, find their opportunity.

Among the actors and actresses who have gained their reputations entirely within the moving-picture studio are such personalities as Mary Pickford, Pearl White, Theda Bara, Charlie Chaplin, Irving Cummings, King Baggot, and William S. Hart.

As has been the case among the actors, so it has been in the writing of the plays enacted through the medium of the camera. The moving picture has brought about the development of a class of playwrights distinct by themselves, and far more numerous. Here clever lines, the art of expression by the written word, plays no part at all; only action is demanded. Hundreds of individuals who never before had felt the call of literature, or, having felt it, have failed in it, have made big successes in preparing the plots for the moving-picture plays. Most of the large studios, in fact, retain staffs of scenario writers permanently, on fixed salaries, who devote their whole time to the preparation of the "scripts," some of which are adapted from popular novels or regular plays which have been successful, but many of which are original.

The popularity and cheapness of moving pictures has caused the moving-picture industry to develop into one of the more important ones of this country. It is estimated that 35,000 persons are employed in the production of the films before they pass into the hands of the distributing agencies, which on their part, including the employees of the show houses, give employment to another 160,000 persons. About 250 firms or corporations are engaged in the production of moving-picture films. The production of the films involves not only the directors and the actors, but the stage hands and carpenters and scenic artists in the studios and the thousands of workers in the factories where the films are reproduced into thousands of copies for distribution among the 17,000 exhibition houses throughout the country. These films are first sent out by the distributive agencies, of which there are about 1,400 in the country, and they in their turn circulate them among the exhibition houses. It is estimated that about $600,000,000 is invested in the moving-picture industry, and that the yearly salaries paid out to those employed amount to $250,000,000. Audiences in the exhibition houses are estimated at 50,000,000 a week.

Moving pictures, however, are not entirely confined to the amusement field. They are now beginning to be extensively employed in education. By means of moving-picture photography the growth of plants, the development of animal life on the most infinitesimal scale, may be portrayed through a magnifying process. By the same means industrial processes, such as the various stages of the manufacture of any commodity, may be shown to a class of students with a vividness not attainable through any other means. At the present time hardly any historic event or ceremony takes place without being recorded on the films, to be presented to the eyes of generations not yet born. There is hardly a scene or battle of the Great War which is not thus recorded, all the belligerent governments having had staffs of moving-picture photographers on the field to record the movements of their armies. In this particular phase of its usefulness, the moving-picture invention has tremendous possibilities before it.

MOWBRAY, HENRY SIDDONS, a painter. Born of English parentage in Alexandria, Egypt, in 1858, he was brought to the United States when a year old, and when 19 went to Paris to study painting. He at first engaged in portrait painting, but later devoted himself to mural decorating. He became director of the American Academy in Rome in 1903. His principal decorations are at the residences of F. W. Vanderbilt, C. P. Huntington, J. Pierpont Morgan, Appellate Court House, and University Club, New York.

MÖWE, THE, a German sea raider, left Bremerhaven on Dec. 20, 1915, passed the blockade of the British fleet

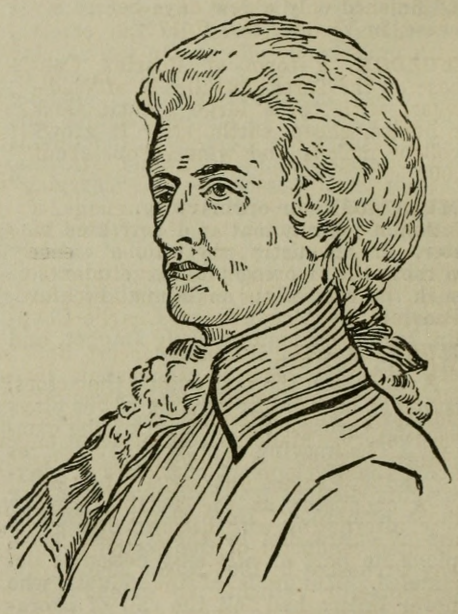
in the Channel, under the command of Count zu Dohna-Schlobitten, Captain in the Imperial German Navy, with a crew of about 300 men. Within a period of less than three months he sank 15 merchant ships, captured the "Appam," sent her in to Norfolk, Va., then returned home with 200 prisoners and $250,000 in treasure. Her safe arrival caused great enthusiasm throughout Germany.

MOXOM, PHILIP STAFFORD, clergyman. Born in Markham, Conn., in 1848, he served with the Army of the Cumberland in 1862, and enlisted in the 17th Illinois Cavalry, serving in 1863-1865. He studied at Rochester Theological Seminary and Rochester University, graduating from the latter in 1879. Was then Baptist pastor in Cleveland, O., till 1885, and in Boston till 1894, when he took charge of the South Congregational Church, Springfield, Mass., becoming pastor emeritus in 1917. His works include: "The Aim of Life" and "Two Masters: Browning and Turgenief."

MOZAMBIQUE, the principal province of Portuguese East Africa. It lies between former German East Africa on the N. and British East Africa on the S. and extends from Cape Delgado to Kose Bay, a point just below Delagoa Bay, a distance of 1,300 miles. The N. boundary is formed principally by the Rovuma river; the S. in part by the Maputa; and the W. frontiers by Lake Nyasa, the British protectorate Nyasaland, Rhodesia, and the provinces of the Transvaal and of Natal of the Union of South Africa. This demarcation includes the dependencies of Lourenço Marquez, Zambesia, Inhambane and Gaza, the whole being known as Portuguese East Africa. The limits of this territory were defined by an agreement made between Great Britain and Portugal, in 1891, and Germany and Portugal in 1886 and 1890; the included area is about 300,000 square miles. The forests yield valuable ornamental woods. The soil is naturally fertile, producing maize, rice, manioc, cotton, sesame, cocoanut, india-rubber and medicinal plants. The country is rich in minerals, coal, iron, silver, gold and copper being found there; and mines of the two last named are worked to some extent. The imports consist of cotton goods, hardware, arms and gunpowder, coal, beer, wine and provisions; the exports of ivory, ground nuts, oil seeds, honey, india-rubber, gums, ivory, tortoise-shell, amber and gold dust. The shipping is mostly in the hands of British firms. The chief towns are Mozambique, Chinde, Quilimane and Lourenço Marquez (pop. about 13,000). The population of the colony is about 3,120,000. The administration is in the hands of a Governor-General, who is located at Lourenço Marquez. The town of Mozambique, the capital of the province, stands on a small coral island, separated from the mainland by the narrowest part of the Mozambique Channel.

MOZAMBIQUE CHANNEL, a waterway between Madagascar and the E. coast of Africa; about 1,000 miles long and 400 in average breadth. At its N. extremity are the Comoro Islands.

MOZART, JOHANN CHRYSOSTOM WOLFGANG AMADEUS, a German composer; born in Salzburg, Austria, Jan. 27, 1756. His father was sub-director of the archiepiscopal chapel at Salzburg. At the age of four he played the clavichord, and composed a number of minuets and other pieces still extant. When only six years of age his performances were so remarkable that his father took him and his sister, who possessed similar gifts, to Munich and Vienna, where they obtained every kind of encouragement from the Elector of Bavaria and the Emperor Francis I. In 1763 and 1764 the Mozart family visited Paris and London. Symphonies of his own composition were produced in a public concert in London; and while there he composed and published six sonatas. Two years later, when but 12 years of age, he composed the music for the religious service



WOLFGANG AMADEUS MOZART

and for a trumpet concert at the dedication of the Orphan House Church in Vienna, and conducted it in presence of the imperial court. In 1769, at the age of 13, he was appointed director of the concerts of the Prince Archbishop of Salzburg. In Rome he reproduced from memory the "Miserere" which he had heard sung in St. Peter's. He composed the opera of "Mithridates" at Milan in October, 1770. His opera of "Idomeneo" was composed in 1780. The "Seraglio" followed. His six quartets, dedicated to Haydn, appeared in 1785, and in 1786 "Marriage of Figaro." In 1787 he produced his masterpiece, "Don Juan." To 1791, the last year of his short life, we owe "The Magic Flute," "Titus" and the sublime "Requiem," finished only a few days before his decease, in Vienna, Dec. 5, 1791.

MOZDOK, a town of Russian Caucasus; on the Terek; 58 miles N. of Vladikavkaz, with three large annual fairs for horses, sheep, cattle, etc. It grows excellent melons and wine. Pop. about 15,000.

MUCILAGE, in ordinary language, a solution of gummy matter of any kind in water. In chemistry, the gum of seeds and roots. It is present in large quantities in the root of the marshmallow and in linseed.

MUCK, KARL, German concert and opera director; born at Darmstadt in 1859. Began his professional career at Heidelberg, and attended the Leipsic Conservatory. Made successful début as a pianist in 1880. A conductor at Salzburg and at Prague, 1886-1891. In 1893 was a conductor at the Berlin Opera House, alternating with Richard Strauss. Appointed conductor of the Boston Symphony Orchestra in 1906-1908. The German Emperor refusing to extend his leave, he returned to Germany. In 1911 Dr. Muck was again conducting the Boston Symphony Orchestra, but was forced to resign after the United States entered the World War in 1917.

MUCOUS MEMBRANES, membranes consisting of prolongations of the skin, having their surface coated over and protected by mucus. Their chief divisions are the gastro-pneumonic and genito-urinary mucous membranes, the former covering the inside of the alimentary canal, the air passages, etc.; the latter the inside of the bladder and the urinary passage.

MUCUS, a word, under which various substances are included, consisting chiefly of horny-like substances, epithelium, detached from the mucous surfaces and floating in a peculiar viscid, clear fluid; in some cases these secretions are altered, becoming albuminoid, etc. Mucous affections are, mucin, an inflammatory product; mucous cysts, mucous laryngitis, polypi, softening tumors. In botany gummy matter, soluble in water. It also contains mucin.

MUDFISH, *Amia calva*, the sole species of the family *Amiidæ*. The color is dull, often dark-greenish, with black spots and bands, and there is frequently a round black spot on the tail. It attains a length of about two feet; it feeds on fluviatile crustacea. It is limited to rivers and lakes of the United States, abundant between the Rocky Mountains and the Alleghenies.

MUEZZIN (mö-edz'zin) (Arabic, Muzin or Muazzin; sometimes Mueddin), the official attached to the Mohammedan mosque, who announces the different times of prayer.

MUFTI, the title of a high Turkish office. The Grand Mufti or Sheikh-ul-Islam is the head of the great corporation of Ulema, the interpreters of the Koran, by whose decisions (when written down, Fetwas) the cadis have to judge. The chief of the Ulema is little less powerful than the grand vizier.

MUGGLETONIANS, a sect founded by Lodowick Muggleton (1610-1698), the son of a farrier in Bishopsgate street, London. He was a tailor, and when about 40 years old began to have visions and to hear "voices," and asserted that he and John Reeve, another tailor, were the two witnesses mentioned in the Revelation (xi: 3.). Their chief doctrines were that the distinction of Persons in the Trinity is merely nominal; that God has a real human body, and that when He suffered on the cross He left Elijah as His viceregent in heaven.

MÜHLBACH, LUISE (mül'bah), pseudonym of Madame KLARA MÜLLER MUNDT; a German novelist, wife of Theodore Mundt; born in Neubrandenburg, Jan. 2, 1814. She wrote a number of popular historical novels, including "Queen Hortense" (5th ed. 1861); "Emperor Joseph II. and his Court" (9th ed. 1866); "Emperor Alexander and his Court" (1868); "Frederick the Great and his Court" (8th ed. 1882). She died in Berlin, Sept. 26, 1873.

MÜHLBERG (mül'berg), a town of Prussian Saxony, on the Elbe, 36 miles S. E. of Wittenberg. Here, on April 24, 1547, the Emperor Charles V. defeated John Frederick the Magnanimous, Elector of Saxony.

MUHLENBERG COLLEGE, an educational institution in Allentown, Pa.; founded in 1867 under the auspices of the Lutheran Church; reported at the close of 1919: Professors and instructors, 14; students, 189.

MÜHLHAUSEN (mül'hou-zen), a town of Prussian Saxony, on the Unstrut, 25 miles N. N. W. of Gotha; is an active center of commerce, and has manufactures of woolen and cotton goods, hosiery, etc. An important imperial free city even in the 13th century, it came to



JOHN MUIR

Prussia in 1802, to Westphalia in 1807, and again to Prussia in 1815. Pop. about 35,000.

MUIR, CHARLES HENRY, American soldier; born in Erie, Mich., in 1860; he graduated from the United States Military Academy in 1885, and from the Infantry and Cavalry School, Fort Leavenworth, Kan., in 1895, at the head of his class. He held first place in the Army Rifle Team in 1890, and with 10 companions attacked Rosario, P. I., in January, 1900, driving out General Malvar's headquarters, capturing $25,000 from his treasury, and releasing 300 Spanish prisoners. From 1903 to 1907 he was a member of the general staff at Washington and was assigned to the 28th Division in December, 1917. Has campaign badges of Indian Wars, Spanish-American War, Cuban Occupation, Philippine Insurrection, and China Relief Expedition. He became commander at Camp Hancock, Augusta, Ga., in January, 1918, and till 1920 was on service at the War Department, Washington.

MUIR, JOHN, an American naturalist born in Dunbar, Scotland, April 21, 1838; educated in Scotland and at the University of Wisconsin. His first explorations were in the less known regions of North America. For 25 years he wandered from the Gulf of Mexico to the glaciers of Alaska. In 1879 he discovered the famous Alaska glacier which bears his name. He was a member of the relief expedition sent to the Arctic regions on the United States steamer "Corwin." He wrote over 150 articles on the physiography and natural history of the Pacific coast, on Alaska, etc. He was one of the pioneers of the movement to conserve forests and establish natural parks. He was a member of the American Academy of Art and Letters. His most important works were: "Mountains of California" (1894); "Our National Parks" (1901); "Story of My Boyhood and Youth" (1913). He also contributed much to periodicals. He died in 1914.

MUIR GLACIER, an Alaskan glacier discovered in 1878 by John Muir. The ice forming it flows down the slope of Mount Fairweather, over 15,000 feet high, and enters Glacier Bay, forming a wall of ice nearly two miles long and from 135 to 200 feet high. From the lower end break off great icebergs which are carried away to sea.

MUKDEN, MOUKDEN, or FUNG-TIEN-FU, a town of China, capital of Manchuria and of the province of Leao-Tong, about 380 miles N. E. of Peking. It is doubly walled, being an old and long-time residence of the Imperial Clan or Manchu sovereigns before their conquest of China. Feb. 28 to March 13, 1905, the greatest battle of the Russo-Japanese War took place here. The city has a large trade. Pop. about 160,000.

MULATTO, a person that is the offspring of parents of whom one is white and the other is a negro. The mulatto is of a dark color tinged with yellow, with frizzled or woolly hair, and resembles the European more than the African.

MULBERRY (*Morus*), a genus of trees of the natural order *Moraceæ*, natives of temperate and warm climates, with diciduous leaves, unisexual flowers

in short, thick spikes, a four-parted perianth, containing either four stamens or one pistil with two styles, the perianth of the female flowers becoming succulent and closing over the small pericarp, the whole spike coalescing into an aggregate fruit.

MULE, in zoölogy, a term loosely used as synonymous with hybrid, more usually applied to the produce of a male ass with a mare, the mule proper (*Equus asinus*, variety gamma), and to the hinny (*E. asinus*, variety delta), the offspring of a stallion and a she-ass. The mule does not attain maturity as soon as the horse, but is useful a much longer period.

In botany, a hybrid; a cross between two distinct species.

MULHALL, MICHAEL GEORGE, a British statistician; born in Dublin, Ireland, in 1836. Having removed to South America, he founded the Buenos Ayres "Standard" (1861), the first English daily paper printed in South America. He published: "Handbook of the River Plata" (5th ed. 1885), translated into Spanish; "Progress of the World" (1880); "Dictionary of Statistics" (new ed. 1892); "Industries and Wealth of Nations" (1896); etc. He died in Dublin, Ireland, Dec. 12, 1900.

MÜLHAUSEN, or **MÜHLHAUSEN** (mül'hou-zen) (in French Mulhouse), a commercial and manufacturing town of Alsace, capital of the circle of Mülhausen, on the Ill river and the Rhone canal, 17½ miles N. W. of Basil, Switzerland. Mülhausen is first mentioned in 717; became an imperial free city in 1273; in the 15th century entered into an alliance with the Swiss which lasted till 1798, when it became French; was ceded to Germany, with Alsace, in 1871. Its industrial importance dates from 1746, when a cotton factory was established. It was the birthplace of Lambert, the mathematician. Mülhausen was captured by a French force in the first months of the World War, but was regained by the Germans, and remained in their possession until the end of the war. Pop. 100,000. See ALSACE-LORRAINE.

MÜLHEIM-ON-THE-RHINE, a city of Germany in the Rhine province. It contains many handsome ancient and modern buildings. Prior to the World War it had important manufactories of silk, machinery, chemicals, and tobacco. Pop. about 55,000.

MÜLHEIM-ON-THE-RUHR, a city of Germany in the Rhine province. In the surrounding region are important coal and iron mines and it had, prior to the World War, important industrial interests, including manufactories of machinery, tubes, leather, beer, etc. Pop. about 115,000.

MULL, an island on the W. coast of Scotland, one of the Hebrides, belonging to Argyllshire, from which it is separated by the Sound of Mull and the Firth of Lorne; length 30 miles, breadth 29 miles. The island is for the most part mountainous, the highest point being Benmore, 3,185 feet above sea-level. The land in some parts is adapted for grazing, and there are numerous freshwater lochs. The only town is Tobermory.

MULLANITE, a mineral consisting of lead sulph-antimonite. Occurs as slender, steel-gray prisms, with a metallic luster. Found in Idaho and Montana.

MULLEIN, the common English name for the plant *Verbascum Thapsus*, natural order *Scrophulariaceæ*. The common mullein grows in old fields, roadsides, etc., and is a tall rough plant. The flowers are yellow, almost sessile, and are disposed in a long, cylindrical spike.

MÜLLER, FRIEDRICH, called PAINTER MÜLLER, a German painter and dramatist; born in Kreuznach, Prussia, Jan. 13, 1749. His first interest was in art and in 1778 he went to Rome to study painting, but his pictures were unsuccessful. He wrote: "Bacchido and Milo" (1775); "The Satyr Mopsus" (1775); "Adam's First Awaking and First Happy Nights" (1778); the dramas "Genoveva" (1808); "Life of Faust" (latest ed. 1881); the opera "Niobe" (1778); etc. ("Works," new ed., Heidelberg, 1825.) He died in Rome, April 23, 1825.

MÜLLER, FRIEDRICH MAX, a German philologist; born in Dessau, Germany, Dec. 6, 1823; son of Wilhelm Müller, the German poet; was educated at the Universities of Berlin and Leipsic; removed to England in 1846; and was Professor of Comparative Philology at the University of Oxford in 1868-1875. He was the editor or translator of "Hitopadesa" (1844); the "Rig-Vedas" (6 vols. 1849-1874); etc., and the author of "A History of Ancient Sanskrit Literature" (1859); "Lectures on the Science of Languages" (1861-1864); "Chips from a German Workshop" (1868-1875); "Lectures on the Science of Religion" (1870); etc. He died in Oxford, England, Oct. 28, 1900.

MULLET, in ichthyology, the popular name of the genus *Mullus* and of the

family *Mugilidæ*. The former are distinguished as red, and the latter as gray mullets.

MULLION, a vertical division between the lights of windows, screens, etc., in Gothic architecture. Mullions are rarely found earlier than the Early English style. The term is also applied to the division between the panels in wainscotting.

MULTAN, or **MOOLTAN** (möl-tän'), a city of India, in the Punjab, the chief city and capital of a district of same name; 4 miles from the Chenab; partly surrounded by a wall, and overlooked by a fortress of some strength occupied by European troops. The streets are mostly narrow and tortuous. It is one of the most ancient cities in India, and is the center of a large trade. Pop. about 100,000.

MULTIPLE, in arithmetic and algebra, a number which contains another number an exact number of times without any remainder; thus, 20 is a multiple of 5. Common multiple of two or more numbers: In arithmetic, any number which contains each of these numbers an exact number of times without any remainder; as, 30 is a common multiple of 2, 5 and 6. The least common multiple is the smallest number which will do this; thus, 24 is a common multiple of 3 and 4, but 12 is their least common multiple. Multiple point of a curve: In geometry, a point in which two or more branches of a curve intersect each other. The analytical characteristic of a multiple point of a curve is, that at it the first differential co-efficient of the ordinate must have two or more values.

MUMMY, in archæology, the name given to animal remains chemically preserved from decay by various processes of embalming. By far the larger number of mummies that have been brought to light are human, for, according to the religious law of ancient Egypt, some process of mummification was universally obligatory; but it was also the custom to embalm cats, crocodiles, ichneumons, and other sacred animals. Recent researches have established the fact that the practice was due to the belief in the necessity of preserving the body inviolate in readiness for the resurrection. The Egyptian practice of mummification had a wide range in time. It is fixed at from 3800 to 4000 B. C.

The Metropolitan Museum in New York has a rich collection of mummies. The ancient Peruvians practiced a kind of mummification; and the Guanches, the aborigines of the Canaries, employed a method of embalming similar to that of the Egyptians, filling the hollow caused by the removal of the viscera with salt and an absorbent vegetable powder. In horticulture, a sort of wax used in grafting trees. In painting, a sort of brown bituminous pigment. To beat to a mummy, to thrash severely, to pound.

MUMPS, a contagious disease communicated by the saliva, sometimes epidemic, and characterized by a specific swelling and inflammation in the parotid and salivary glands, commonest in children, and in boys rather than girls. It occurs mostly in spring and autumn, in cold and damp weather.

MÜNCHEN. See MUNICH.

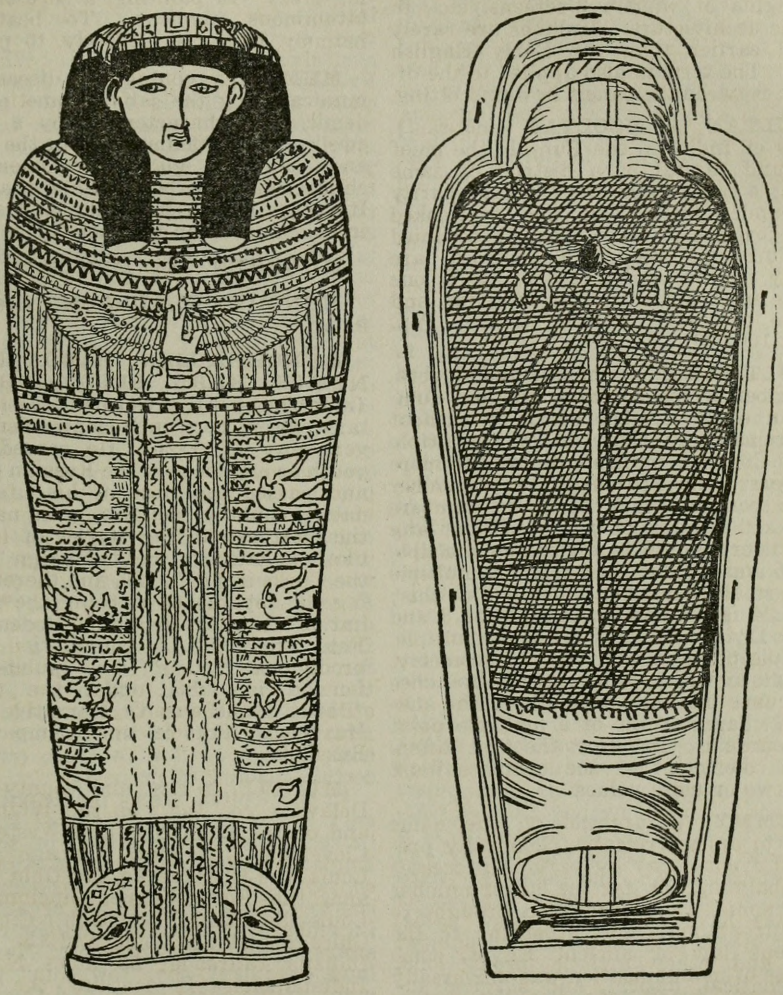
MÜNCHEN-GLADBACH. See GLADBACH.

MÜNCHHAUSEN, BARON HIERONYMUS KARL FRIEDRICH VON (münh'hou-zen), a German-Russian military officer; born in Bodenwerder, Hanover, May 11, 1720. He served in his youth as an officer in the Russian cavalry, and passed the close of his life in his native country, delighting in narrating the most astounding stories of his warlike exploits in the campaign against the Turks in 1737-1739, and thereby gaining the reputation of being the greatest liar of his time. He died in Bodenwerder, Feb. 22, 1797. A compilation of his prodigious "yarns" was published in London in 1785, under the title of "Baron Münchausen's Narrative of His Marvelous Travels and Campaigns in Russia."

MUNCIE, a city and county-seat of Delaware co., Ind.; on the White river, and on the Lake Erie and Western; the Cleveland, Cincinnati, Chicago and St. Louis, the Chesapeake and Ohio of Indiana, the Fort Wayne, Cincinnati and Louisville, the Pittsburgh, Cincinnati, Chicago and St. Louis and the Central Indiana railroads; 53 miles N. E. of Indianapolis. It contains the Muncie Normal Institute, high schools, hospital, public library, street railroad and electric light plants, several National banks, and daily and weekly newspapers. It has a pulp mill, a number of large glass works and automobile works, several iron and steel works. Pop. (1910) 24,005; (1920) 36,524.

MUNDELEIN, GEORGE WILLIAM, Catholic archbishop; born in New York, in 1872, he studied at St. Vincent's Seminary, Beatty, Pa., and attained his D. D. degree at the Propaganda College, Rome. He was ordained priest in 1895, became secretary to bishop and pastor of Lithu-

anian Church, Williamsburg, Pa., in 1895, and later chancellor of the diocese. Appointed domestic prelate in 1906, and titular bishop of Loryma and auxiliary bishop of Brooklyn in 1909. He has been archbishop of Chicago since 1916.



MUMMY CASE AND MUMMY OF EGYPTIAN KING

MUNGOOS, or **MONGOOSE**, *Herpestes griseus*, an ichneumon, common in many parts of India, and closely akin to the Egyptian species, *H. ichneumon*. The mungoos is a weasel-like animal, tawny yellowish-gray, the head with reddish and yellow rings, the colors so disposed as to produce an iron-gray hue. Length of body 16 or 17 inches, of tail 14. It kills numerous birds, sucking their blood and leaving the body uneaten.

MUNHALL, a borough of Pennsylvania in Allegheny co. It is situated on the Pennsylvania railroad. It contains a Carnegie Library and important manufactories of steel products. Pop. (1910) 5,185; (1920) 6,418.

MUNHALL, LEANDER WHITCOMB, American evangelist; born in Zanesville, O., in 1843; graduated from Chattanooga University; served in an Indiana regiment during the Civil War, becoming adjutant of the regiment. Joined the Methodist Episcopal Church and became an evangelist after the war. It is estimated that he has preached on an average of two sermons a day for forty years, and that his audiences have to-

taled up to nearly 20,000,000 individuals, of which 200,000 have become converted.

MUNICH (mū'nik) (German München), the capital city of Bavaria, on an extensive plateau, about 1,700 feet above sea-level, chiefly on the left bank of the Isar. The old town has a quaint and irregular character, but the new town, which has sprung up chiefly to the N. and W., has a regular and imposing appearance, and altogether Munich is one of the finest towns in Germany. Vast improvements are due to the munificence of King Ludwig I. The royal palace forms a very extensive series of buildings chiefly in the Italian style, and contains many magnificent apartments and rich artistic and other treasures. Connected with it are the court church and the court and national theater, among the largest in Germany. The city is highly celebrated for its fine galleries of sculpture (Glyptothek) and painting (Old and New Pinakothek), and for various other important collections, such as that of the Bavarian national museum. The royal library (occupying a fine building in the Florentine style) has upward of 1,000,000 volumes and 30,000 MSS., being thus one of the largest in Europe. The university had in 1915, 265 professors and teachers, and 5,539 students in theology, jurisprudence, medicine, and philosophy, together with a library of over 300,000 volumes. There is an academy of science, an academy of arts, and many fine churches, including the cathedral, founded in 1488. In addition to the public edifices, properly so called, Munich is rich in monuments, which adorn its squares, gardens, and public promenades. The so-called English Garden (laid out by Count Rumford) is a fine park of 600 acres watered by two arms of the Isar. The industries were numerous, and in some particular branches have acquired a high name. Among others may be mentioned painted glass and other artistic productions, mathematical, optical, and surgical instruments, gold and silver lace, jewelry, glass, carriages, bells, musical instruments, etc. Munich is the seat of the high courts of legislature and of law, and of all the more important offices of the state. It was founded by Henry, Duke of Saxony, in 962; taken by Gustavus Adolphus in 1632, by the French under Moreau in 1800, and by Napoleon in 1805. Pop. about 650,000.

MUNICIPAL GOVERNMENT, the power vested in the officials of an incorporated town or city to regulate the affairs of the municipality with a limited degree of freedom from interference from the centralized government of the State or nation. Municipal governments were first granted this measure of autonomy under the Roman Empire, especially in the outlying colonies, where the interference of the imperial governor was curtailed in matters pertaining exclusively to local affairs. When the Franks conquered Italy and France, the cities were allowed to retain a large measure of this autonomy, as was notably the case in Cologne, where, up to the time of the first French Revolution, the two chief magistrates still retained the titles of "consuls." Other cities, such as Venice, Florence, and Hamburg, attained complete independence, and would enter into offensive and defensive alliances with foreign governments. In England charters were first granted to the municipalities, or burghs, by the Normans. Here, as in all European countries during the Middle Ages, it was the policies of the kings to grant greater freedom to the cities, to offset the growing power of the feudal lords. The officials, however, were not chosen by popular suffrage, but by the wealthier citizens, the merchants, and by the guilds, which were organizations of traders and crafts workers. These crafts organizations were especially powerful in Scotland. It was not till the early part of last century that a cry for electoral reform arose, and with it a demand for a broader suffrage in the election of municipal officials. An Act of Parliament was then passed conferring the suffrage on the citizens in general, though limited to those owning a certain amount of property.

In the United States municipal autonomy has a peculiar origin of its own; in the "township meeting" of the New England States, as a unit of democratic control. Borrowing the principle and the form from their church organization, in which every member had the right of suffrage, the early citizens of New England organized the "township" government on the same basis, and thus established an institution that has had a very far-reaching influence in all democratic forms of government. It is indeed claimed that the Russian soviet, the unit of organization of the Bolshevist Government of Russia, was directly patterned after the old New England township.

The New England townships, however, while based on the right of full autonomy in local affairs, wherein they do not encroach on the authority of the State, are subservient to the State government in all matters under the jurisdiction of the State

Throughout the whole of the United

States municipal government is based on the theory that the State supersedes the city in authority, and that the city government derives its authority from the State, rather than directly from its citizens. As a result of this centralization of power there has been much abuse. As an instance, while the city of New York has invariably been Democratic in its party affiliations, the State government quite as invariably is controlled by the Republican politicians in the rural sections of the State. Thus Republican policies and appointees were forced upon a large metropolis with interests different from those of other sections of the State, and with problems of its own.

As a result of this condition, obtaining in all parts of the country, there has arisen a strong movement for municipal home rule, the aim of which is to secure for the larger towns and cities a larger degree of autonomy, based on special charter. Specifically the demand has been for the right of the citizens to pass ordinances, or laws, regulating matters pertaining solely to the life of the city. Local control of the police force is one of the points most emphasized. The pioneer of this movement was Prof. Frank J. Goodnow, who has written considerably on this subject.

Many of the States of the Union have responded to this demand in varying degree. The first State to grant its municipalities the right to frame their own charters was Missouri, where the necessary amendments of the State constitution were passed as far back as 1875. Other States have followed in this order: California, 1879; Washington, 1889; New York, 1894; Minnesota, 1896; Oklahoma, 1907; Michigan, 1908; Arizona, 1912; Ohio, 1912; Nebraska, 1912; Texas, 1912.

While based on more equitable principles, the granting of a broader home rule for municipalities has had one evil result in the greater amount of corruption which has developed in the governments of those cities which have been granted the right to frame their own charters. The notorious "muckraking" articles which were published in prominent magazines during several years, beginning with 1903, exposing the corruption of municipal politics in some of the largest cities of the country, centered public attention on this evil.

The opportunity for corruption lay in the fact that the heads of the various departments of city government were appointed by the mayor, and were therefore not directly responsible to the electorate.

To correct the evil, reform movements arose in many of the larger cities and a still greater number of the smaller towns and cities, which put into effect a new form of municipal government, known as the commission form of government. By this method the city is governed by a small group, or commission, sometimes numbering only five men, each of whom is elected directly by the voters, and each of whom is responsible for a certain department of the city administration. The office of mayor is completely eliminated. In 1920 over seventy American municipalities had adopted this form of administration.

MUNICIPAL MARKETS, marts for the buying and selling of foodstuffs controlled by the town or city. In primitive countries this consists of an open space within the municipality, where the farmers from the outlaying districts gather on certain days to sell their produce to the townspeople. In modern cities and especially in this country municipal markets consists usually of well-equipped buildings let to private storekeepers, whose prices are more or less under control, for the purpose of combating unjustified profit-making of the great body of food merchants of the city. During the war days in the United States, and especially since the close of the war, many cities have considered the advisability of taking up the actual sale of foodstuffs in the markets as well, but this has not yet been widely practiced. The idea of the municipal market is still to provide an open market where producer and consumer may meet without the undue intervention of middlemen.

MUNICIPAL OWNERSHIP, the ownership, and usually the operation, of public services or industries by a municipality, on a non-profit-making basis. This is a question which within recent years has become the subject of much debate between those in favor of private industry as a fundamental principle and those in favor of the "socialization" of public service and industry.

The practice of municipal ownership has made much more progress abroad than in the United States, more especially in Germany. There, in such cities as Berlin and Hamburg the principle has been extended to the ownership and operation by the city of such enterprises as housing, the slaughter of food animals and the preparation for the market of their meat and even, in some smaller cities, the production of field crops on communal land.

In the United States municipal ownership has so far been almost entirely limited to the public utilities, and some-

times these are merely owned by the municipality and leased out for operation to private corporations. Municipal enterprises may generally be classified under these heads: those which constitute natural monopolies, such as the supply of water; those which involve the granting of special privileges, such as the use of the main streets for street railway transportation; and those which are inseparable from the maintenance of the public health, as is the case with the cleaning of the streets and the disposal of refuse and sewage.

But even within these narrow limitations American cities have not taken up municipal ownership on a very wide scale. The development of this movement in the United States may be judged from the following figures: Out of 204 American cities, having a population of over 30,000, there are 156 which own and operate their own water-supply systems. No city with a population over 300,000 is supplied with water by private corporations. Here we have the widest development of municipal ownership in the United States. Obviously, the supply of water closely involves the health of the citizens of a community.

In the matter of municipal lighting the field is much less extended. Of the 204 cities with populations over 30,000, only 21 own and operate their own lighting plants, of which Detroit and Chicago are the most notable examples. Throughout the country 1,500 municipalities supply their own lighting. Almost entirely this is where electric lighting is employed. For of the 204 cities considered, only five operate gas lighting plants, the largest of which is Richmond, Va.

Municipal ownership and operation of street railways, in which considerable progress has been made in European cities, has few examples in this country. Boston and New York City have both built and now own extensive railway systems, but both these cities have leased their systems to private corporations for operation. In 1913 San Francisco took over a large part of its street railways. During the first year of operation by the city, the municipal street railways netted the city a surplus of $45,000. Contrasted to this apparent success, is the experience of Philadelphia, which, many years ago, took over the operation of a municipal gas lighting plant. In 1897 the enterprise was pronounced a failure, largely on account of the political corruption which it involved, and the lighting system of the city was leased to a private corporation.

Glasgow, Scotland, is usually pointed out as an example of successful municipal ownership. In 1894 Glasgow took over what were then its horse-car lines, 64 miles in length. The city has since installed modern electric transportation and lengthened the municipally operated lines 200 miles. Fares have been reduced, and the cost of operation has been reduced from $1.80 per mile to 88 cents per mile. This enterprise has now created a balance in the city treasury in its favor amounting to $150,000. In more recent years Glasgow has taken over the problem of municipal housing, with the result that many of the old obnoxious slum districts have been wiped out and replaced by well-kept rows of working-class houses, rented out to their tenants at very near cost price.

As already stated, numbers of German communities have carried the practice of municipal ownership into the supply of foodstuffs. In the United States, where municipal freedom is much more limited by the State constitutions, specific laws on the statute books forbid local communities competing with private enterprises. Such proved to be the case when the Socialist party, electing the mayor and city council of Schenectady, N. Y., in 1911, attempted to establish a central depot for the supply of ice and groceries to the citizens. A decision of the courts compelled the abandonment of the enterprise, which was turned over to a co-operative society.

With the rapid rise in the prices of foodstuffs during and after the war, a decided movement has been initiated for the municipal supply of foodstuffs in American cities. This was strongly stimulated when the War Department, in Washington, placed its surplus food supplies on the market for distribution in the fall of 1919, to be distributed among the people on a limited, or non-profit basis. Under the supervision of the city authorities, the city of New York distributed large quantities of these supplies, utilizing the public schools as centers of distribution. Following this example, thousands of smaller communities throughout the country undertook to receive assignments of foodstuffs from the War Department and distribute them among their citizens at nearly cost price, the stipulation being that no profit should be made.

Municipal milk supply is a special phase of this class of municipal ownership which has received much consideration in recent years. In Great Britain this idea has been put into limited practice and is being advocated by many popular organizations, especially of women. Here, however, the question of public health is closely involved, so that

milk is considered well within the legitimate scope of municipal enterprise, even by people otherwise against too wide a broadening of municipal ownership. Of the political parties the Progressives have stood for a considerable extension of the principle of ownership, while the Socialists consider it one of the fundamental planks of their platform.

MUNKÁCS (mön-käch'), a market-town of Hungary, at the foot of the Carpathians, 101 miles N. E. of Debreczin; has mines of iron and rock-crystals, called Hungarian diamonds. The citadel, built on an isolated height, resisted the imperial arms for three years (1685-1688); and having fallen in 1848 into the hands of the Hungarians was captured by the Russians in the following year. It is now a state prison. Pop. about 18,000.

MUNKACSY, MICHAEL (mön'kächē), a Hungarian painter, whose real surname was LIEB; born in Munkacs, Hungary, Oct. 10, 1846. He went as a turner's apprentice to Vienna, and studied painting there, at Munich, and at Düsseldorf, and in 1872 settled in Paris. He visited New York in 1886. Except a few portraits, his works are nearly all genre pictures. The best-known examples of his work are "Milton Dictating 'Paradise Lost' to His Daughters," "Christ before Pilate," "Crucifixion," and "Mozart's Last Moments." He died in Bonn, Germany, May 1, 1900.

MUNROE, CHARLES EDWARD, chemist; born in Cambridge, Mass., in 1849, he graduated from Harvard in 1871, acting as assistant in chemistry till 1874. He was professor in chemistry at the U. S. Naval Academy from 1874 to 1876, and chemist to the torpedo corps, U. S. Naval Torpedo Station and War College 1886-1892. Became dean of faculty at George Washington University in 1893, president of American Chemical Society in 1898, and special agent of U. S. Census Bureau 1905 and 1910. In 1911 he published "A Primer on Explosives for Coal Miners."

MUNROE, HENRY SMITH, mining engineer; born in Brooklyn, in 1850, he was educated at Columbia University, and became assistant geologist of the Ohio State Geological Survey in 1870, and chemist in the U. S. Department of Agriculture in 1870. He was assistant geologist and mining engineer in the geological survey of Yezo, Japan, from 1872 to 1875, professor of geology and mining, University of Tokyo, 1875-1876, and adjunct professor of surveying and practical mining at Columbia 1877 to 1891. From 1891 to 1915 he was professor of mining at Columbia, emeritus professor in 1915.

MUNSEY, FRANK ANDREW, American publisher; born at Mercer, Me., Aug. 21, 1854. Educated at public schools. Was manager of a telegraph office in Augusta, Me. He came to New York in 1882 and edited and published "The Golden Argosy" magazine. At first a juvenile publication, he changed it to a story magazine for adults, as "The Argosy." "Munsey's Weekly" started in 1889, developed into "Munsey's Magazine" in the year 1901. As the first popular illustrated magazine of standard size to be sold for ten cents it attained a great circulation and was widely imitated. Mr. Munsey owns and controls "The Argosy," "Munsey's Magazine," "The Rail Road Man's Magazine," "The All-Story Weekly," "The Baltimore News," "The Sun," New York, and in 1920 acquired "The New York Herald" and "The Evening Telegram." Mr. Munsey has writen several novels and books for boys. His works are "Under Fire" (1890); "Afloat in a Great City" (1887); "The Boy Broker" (1888); "Tragedy of Errors" (1889); "Derringforth" (1894).

MUNSTER, province in Ireland, ancient kingdom of the O'Briens of Thomond, occupying S. W. of island. Contains counties Waterford, Tipperary, Clare, Cork, Kerry, Limerick. Watered by Shannon, Suir, Blackwater, and Lakes of Killarney. Had famous medieval school at Ross Carbery. Area, 9,532 square miles. Pop. about 1,000,000.

MÜNSTER, a town of Prussia, capital of the province of Westphalia; in a plain on the Aa; 78 miles N. N. E. of Cologne. It was once fortified, but the fortifications have been converted into promenades. The principal edifices are the cathedral, the church of St. Lambert, the town house, the exchange, museum, theater, etc. The manufactures include woolen, linen, and cotton goods, etc. Münster was long governed by independent bishops, in whom a warlike spirit was often more conspicuous than a Christian spirit. The most memorable events in the history of the town occurred in 1532-1535, when it fell into the hands of the Anabaptists. Pop. about 90,000.

MÜNSTERBERG, HUGO, a German American psychologist; born in Danzig in 1863, died in America in 1916. After receiving his doctorate at Leipsic in 1885, he taught psychology at Freiburg from 1887-1892. In the latter year he came to America as professor of psychol-

ogy at Harvard University, and from that time on most of his work was done in the United States. In 1910-1911 he returned to Germany as the Harvard exchange professor at the University of Berlin. The latter part of his life was given to the attempt to make practical application of the psychological principles taught by him. During the period before the United States entered the war against Germany he wrote extensively in support of his country's cause.

MUNTJAC, or **MUNTJACK**, *Cervulus*, a genus of deer, indigenous in the S. and E. parts of Asia and the adjacent islands. They are diminutive animals, with small and simple antlers in the males, which have the upper canines strongly developed and sharp, curving downward, and capable of inflicting deep and dangerous wounds. Four species are known: *C. muntjac, C. lacrymans, C. reevesi*, and *C. crinifrons*, the hairy-fronted muntjac.

MÜNZER, THOMAS (münt'ser), a leader of the ANABAPTISTS (*q. v.*); born in Stolberg, in the Harz, about 1489. He studied theology, and in 1520 began to preach at Zwickau. His Christian socialism and his mystical doctrines soon brought him into collision with the Reformers and the town authorities. He thereupon made a preaching tour through Bohemia, Silesia, Brandenburg, and settled in Thuringia (1523). Again deprived of his office, he visited Nuremberg, Basel, and other S. German cities, and was finally in 1525 elected pastor of the Anabaptists of Mühlhausen, where he won the common people, notwithstanding Luther's denunciations of him, introduced his communistic ideas, and soon had the whole country in insurrection. But on May 15, 1525, he and his men were totally routed at Frankenhausen by Philip of Hesse. Münzer escaped from the battle field, but was captured in flight and executed in Mühlhausen, Prussian Saxony, May 30, 1525.

MURAD V., Sultan of Turkey; born Sept. 21, 1840. He was son of Abdul-Medjid, and he succeeded to the throne on the forcible deposition of Abdul Aziz, Aug. 31, 1876, but was deposed in the course of the same year on account of insanity, and was succeeded by his younger brother ABDUL-HAMID II. (*q. v.*). He died in 1904.

MURAL ARCH, a wall, or walled arch, placed exactly in the plane of the meridian line for fixing a large quadrant, sextant, or other instrument, to observe the meridian altitudes, etc., of the heavenly bodies.

MURAL CIRCLE, an astronomical instrument consisting of a graduated circle, furnished with a telescope and firmly affixed to a wall, in the plane of the meridian. It is used for determining with great accuracy altitudes and zenith distances, from which may be found declinations and polar distances, and has a graduated circle secured at right angles to its horizontal axis. See TRANSIT.

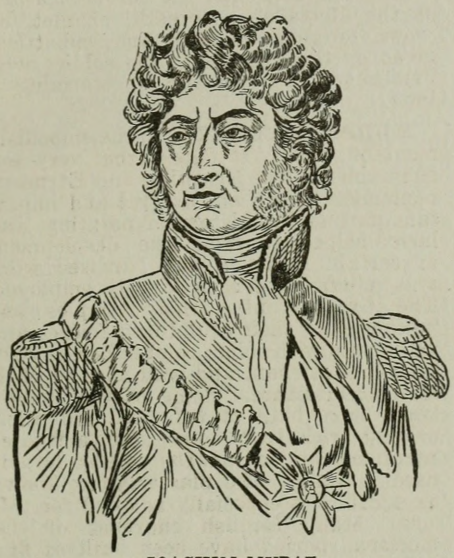
MURAL CROWN, the *corona muralis* of the Romans; a wreath, chaplet, or crown of gold, indented and embattled, given by the Romans to the soldier who first mounted a breach in storming a town.

MURAL DECORATION, the embellishment of walls. It dates from very ancient times. The Egyptian and Etruscan monuments form an integral and important part of the history of painting, and have helped to mold the development of certain styles of art. Incised work and reliefs have been largely employed. The Greeks tinted their temples and "picked out" their sculptured friezes and pediments with color; colored bricks were used in Assyrian, and wall tiles in Moslem, architecture. Some of the Roman walls were built of tufa and red brick, colored brick, terra-cotta, and variegated arrangements of marble were largely used in Italy. The plaster work known as sgraffito is especially adapted for this use. Many English churches of the mediæval period have been built of flint and stone, and much Tudor work of parti-colored brick. Distemper and fresco are described in separate articles; water glass is a silicate process of which there is an example in the English Houses of Parliament. Mosaic work is extensively used in floors and ceilings, but also occasionally employed in mural decoration.

MURANO (mö-rä'nō), an island and town of Italy, about a mile N. of Venice; it is famous as the seat of the Venetian glass manufacture—an industry established in the 13th century, and revived in 1860 by Antonio Salviati (1816-1890). It possesses a fine 12th-century cathedral, and another church with some valuable pictures, including Paul Veronese's "St. Jerome in the Desert." Pop. about 6,000.

MURAT, JOACHIM (mü-rä'), a French military officer; born in Bastide, Lot, France, March 25, 1771. He was the son of an innkeeper at Cahors, and was intended for the Church, but escaping from the College of Toulouse, he enlisted as a chasseur, but was shortly after dismissed for insubordination. On the formation of the constitutional guard,

he entered it, and displaying an active zeal for revolutionary principles, he was soon advanced to the rank of lieutenant-colonel. The overthrow of the Terrorists checked his progress for a time, but the Directory made him chief of brigade, and in 1796 he accompanied Bonaparte to Italy as aide-de-camp. Here he distinguished himself by his impetuous courage as a cavalry officer, and was employed as a diplomatist at Turin and at Genoa. He followed Napoleon to Egypt,



JOACHIM MURAT

where he decided the victory over the Turks at Aboukir, and returned as General of Division. In 1800 he married Marie Caroline, Napoleon's younger sister; and in 1804 Murat was made Marshal, Grand Admiral, and Prince of the French empire. His services in the campaign of 1805 against Austria, during which he entered Vienna at the head of the army, were rewarded with the grand-duchy of Berg. He continued to share Napoleon's victories with such distinction, that, in 1808, the emperor placed him on the throne of Naples. After reigning peaceably four years, he was called to accompany Napoleon to Russia, as commander-in-chief of his cavalry; and, after the defeat of Smolensk, he left the army for Naples. He next took part with Napoleon in the fatal campaign of Germany; but, after the battle of Leipsic, he withdrew, and finding that the throne of the emperor began to totter, concluded an alliance against him. In 1815, however, he again took up arms, and formed a plan to make himself master of Italy as far as the Po, at the very time that Austria and the allies, on his repeated assurances that he would remain true to them, had determined to recognize him as King of Naples. It was too late. Austria, therefore, took the field against him, and he was soon driven as a fugitive to France. After the overthrow of Napoleon he escaped, in the midst of continual dangers, to Corsica, from which he sailed with a few adherents to recover his lost throne. A gale, off the coast of Calabria, dispersed his vessels, but Murat determined to go on shore. He was seized, and carried in chains to Pizzo, brought before a court-martial and condemned to be shot. This sentence was executed Oct. 13, 1815.

MURATORE, LUCIEN, French tenor; born at Marseilles in 1878, he studied voice culture at the conservatory there, and, after some time spent in Paris, sang with Madame Calvé at the Opera Comique in "La Carmelite," "Muguette" and "Le Cor Fleuri" and at the Paris Opera gaining distinction as Faust and Romeo, and in "Salome" and "Francesca da Rimini." Since 1912 he has been a member of the Grand Opera Company in Chicago.

MURCHISON, SIR RODERICK IMPEY, an English geologist; born in Tarradale, Ross-shire, Scotland, Feb. 19, 1792. After receiving a portion of his education at the Durham grammar school, he entered the military college at Marlow in 1805, and left in two years subsequently, on receiving a commission in the 36th regiment. In 1828 he accompanied Sir Charles Lyell in a geological tour among the extinct volcanoes of Auvergne. He subsequently succeeded in discovering the whole series of Silurian rocks in the sea-cliffs W. of Milford Haven, England. The term "Silurian System" which is the name of his first great work, was first used by him. The result of his several expeditions was published in 1845, in a volume, entitled "Geology of Russia and the Ural Mountains." Shortly after the publication of this book Murchison was knighted. In 1854 he produced "Siluria; the History of the oldest known Rocks containing Organic Remains, with a Brief Sketch of the Distribution of Gold over the Earth." In 1855 he was appointed Director-General of the Geological Survey of Great Britain and Director of the Metropolitan School of Science applied to Mining and the Arts. He died Oct. 22, 1871.

MURCIA (mör'thē-ä), an ancient town of Spain, on the Segura river; 46 miles

S. W. of Alicante. It stands in the productive vale of Murcia, an old-fashioned Moorish town, embosomed in gardens of mulberry, orange, fig, palm, and other fruit trees. Almost the only notable buildings are the bishop's palace and the cathedral, this last begun in 1353, but reconstructed in 1521, and surmounted by a fine bell tower. Silks, saltpeter, soda, gunpowder, musical instruments, and glass are manufactured; fruit growing, the preparation of olive oil, and the weaving of esparto also flourish. Alfonso X. of Castile took the city from the Moors in 1263; an earthquake almost destroyed it in 1829; and it was captured by the insurgents in 1843. Pop. about 150,000. The province of Murcia has an area of 4,478 square miles; pop. about 650,000. With the present province of Albacete it was an independent Arab kingdom for 27 years in the 13th century.

MURDER, homicide with malice aforethought; the unlawful killing of a human being by a person of sound mind, with premeditated malice. Murder is divided into various degrees, such as murder in the first degree, which is punishable by death in most of the States of the Union, and lesser degrees punishable by various terms of imprisonment. The crime is modified in law also by the terms manslaughter and homicide.

MURDOCK, JOSEPH BALLARD, Rear-Admiral U. S. N.; born in Hartford, Conn., 1851; graduated from the United States Naval Academy, then served for four years at the North and South Atlantic stations. Entered the coast survey department of the Navy, 1875-1879; instructor of physics at the U. S. Naval Academy, 1880-1883; during the Spanish-American War he served as executive officer on the "Panther." Attained rank of Rear-Admiral in 1909, and was placed in charge of the New York Navy Yard. Commanded the Asiatic fleet, 1911-1912. Has contributed to magazines and is the author of "Notes on Electricity and Magnetism."

MURDOCK, VICTOR, American politician and editor; born at Burlingame, Kan., in 1871, he engaged, after a public school education, in the newspaper business, and from 1894 to 1903 was managing editor of the "Wichita Daily Eagle." He was elected to Congress in 1903 and re-elected in 1905 and retained his seat till 1915. In the latter part of his term he passed from being a Republican to being a Progressive, and in 1914 represented Kansas Progressives as candidate for the U. S. Senate, being defeated by Charles Curtis, Republican. He has been member of the Federal Trade Commission at Washington since 1917, and was appointed member of the Meat Commission of the Government in April, 1918.

MUREX, plural **MURICES**, in zoölogy, the typical genus of the family *Muricidæ*. It is of world-wide distribution, and 180 species are known. *M. tenuispina* is popularly known as Venus's comb.

MURFREE, MARY NOAILLES, pseudonym CHARLES EGBERT CRADDOCK, an American novelist; born in Murfreesboro, Tenn., Jan. 24, 1850. She wrote: "In the Tennessee Mountains," (1884); "The Prophet of the Great Smoky Mountains" (1885); "In the Clouds" (1886); "The Amulet" (1906); "The Raid of the Guerilla" (1912); "The Story of Duciehurst" (1914).

MURFREESBORO, a city and county-seat of Rutherford co., Tenn.; on the Nashville, Chattanooga, and St. Louis railroad; 32 miles S. E. of Nashville. It is in a cotton and agricultural region. Here are a court house, National banks, Soule College (Meth.), Middle Tennessee State Normal School, and the Tennessee College for Young Ladies, and several weekly newspapers. The city has carriage shops, planing mill, sawmills, manufactory of red cedar goods, machine shops, cotton-gin works, and a large trade in cattle and cotton, flour mill, etc. In 1819-1826 it was the capital of Tennessee. Close by the bloody battle of Stone river was fought on Dec. 21, 1862, and Jan. 2, 1863, between Generals Rosecrans and Bragg; the Confederate army was compelled to retreat, but the losses on both sides were nearly equal. Pop. (1910) 4,679; (1920) 5,367.

MURGER, HENRI (mür-zhār'), a French author; born in Paris, France, March 24, 1822. He lived a life of extreme privation; formed an informal club or society of unconventional young artists and authors similarly situated which was named "Bohemia," and his associates "Bohemians"—a name famous in general literary history. He contributed a great mass of "copy" to numerous periodicals, and at last made a reputation by his "Scenes from Bohemian Life." He also published two volumes of poetry, "Ballads and Fancies" and "Winter Nights"; and wrote dramas for the Luxembourg theater, and tales, etc., for the "Revue des Deux Mondes." He died in Paris, Jan. 28, 1861.

MURGHAB, a river that rises in the mountains N. E. of Herat in Afghanistan, flows N. W., and loses itself in the desert of Turkestan beyond Merv.

MURIATIC ACID, hydrochloric acid. A solution of hydrogen chloride gas, HCl, in water. Hydrogen chloride is a colorless gas, with a pungent, irritating odor, having a specific gravity of 1.2596, compared with air as 1. It can be manufactured by decomposing common salt with sulphuric acid, but is now produced very largely as a by-product in the manufacture of salt cake (sodium sulphate). The strongest acid made contains 40 per cent. of hydrogen chloride. Its applications are numerous: it is used in the production of chlorine; the manufacture of various chlorides; for purifying animal and vegetable carbons; for extracting phosphates from bones; for preparing carbonic acid; in the coal-tar color industry, and for many other useful purposes.

MURILLO, BARTOLOMÉ ESTEBAN (mö-rēl'yō), a Spanish painter; born in Seville, Spain, in 1618. He acquired the rudiments of art from his uncle, Juan de Castillo; and being encouraged to visit Madrid, he acquired the countenance and patronage of the great painter Velasquez, then in the height of his reputation. He afterward returned to Seville, and there founded an Academy of Painting, and earned by his labors an imperishable fame. His principal works are: "The Return of the Prodigal Son"; "Abraham Visited by the Angels"; "Christ Healing the Sick of the Palsy"; "The Pool of Bethesda";—but his masterpiece is "Our Lady of the Immaculate Conception," painted in 1678, and purchased by the French government for the sum of $118,000. He died in Seville, April 3, 1682.

MURMANSK COAST, or Peninsula, that section of the Arctic shore stretching from the frontier of Russia with Norway to Cape Svyatoff, on the White Sea, including a distance of about 250 miles. An inward sweep of the Gulf Stream washes the shore, keeping it free of ice the year round, though the White Sea, to the southward, is icebound six months of the year. This region assumed unusual importance during the latter part of the war, after the participation of Russia had been ended by the Brest-Litovsk Treaty, in the early months of 1918. As the only point on Russia's limited sea-coast open to receiving supplies from her allies by sea, large supplies of munitions and foodstuffs had been landed here. In the spring of 1918 the Germans, moving through Finland, attempted to advance in this direction, with the intent to seize these supplies. The Allies immediately landed troops on the coast. The Soviet Government in Moscow protesting, the people of the region precipitated an uprising in favor of Allied intervention and established the Provisional Government of North Russia. More Allied troops, and later Americans, were landed and established a base from which a military campaign against the Soviet troops was waged for more than a year afterward.

MUROM, a city of Russia, in the Government of Vladimir. It is situated on the Oka river. Prior to the World War it had important manufactures and extensive trade in grain. Pop. about 20,000.

MUROMTSEFF, SERGEI ANDREYEVITCH, Russian educator and political leader; born at Petrograd in 1850. He was educated at Moscow and Göttingen, and later became Professor of Roman law at the University of Moscow. In 1879 he became editor of the "Juridical Messenger," a law journal. Because of his liberal political views he had to leave the university in 1884, and eight years later his paper was suppressed and the Juridical Society was forbidden to hold any further meetings. On the establishment of the First Russian Duma, Muromtseff was elected Senior Deputy from Moscow by the Constitutional Democratic party, and he was later elected President of the Duma.

MURPHY, CHARLES FRANCIS, born in New York, in 1858. After a common school education had been secured in the New York schools, he worked for a time as a factory operative and later as a street-car driver. In 1892 he became the Democratic leader in the 18th Assembly District of New York. In the succeeding years he was Commissioner of Docks and Ferries and treasurer of the board. From 1892-1902 Murphy was a prominent leader in Tammany Hall, the Democratic organization in New York city, and in 1902 he was elected "sachem" or chief, a position which he has held continuously since that time.

MURPHY, JOHN FRANCIS, painter; born in Oswego, N. Y., in 1853, he moved to New York City when twenty-two years old, his art having been largely self-acquired. He made his first exhibition at the National Academy of Design in 1876, after which he devoted himself to landscapes. He was elected a member of the academy in 1887. He received the 2d Hallgarten prize in 1885 for his painting "Tints of a Vanished Past"; also 1887, the Webb prize of the Society of American Artists. "Neglected Lands" and "October" are among the best examples of his talent.

MURPHY, LAMBERT, tenor; born in Springfield, Mass., in 1845, he studied at Harvard, and while there took singing lessons under T. L. Cushman. He then commenced singing in churches at Boston, Brookline, Fairhaven, and New York, finally joining the Metropolitan Opera in 1911. Since that time he has been heard on many platforms all over the United States.

MURPHYSBORO, a city of Illinois, the county-seat of Jackson co., 87 miles S. E. of St. Louis, Mo. It is situated on the Big Muddy river and on the Illinois Central, the Mobile and Ohio, and the St. Louis, Iron Mountain, and Southern railroads. It contains the St. Andrew's Hospital and an excellent high school. The city is the center of important agricultural and mining industries. There are railroad shops and manufactories of flour, lumber, shoes, bricks, etc. The city has the commission form of government. Pop. (1910) 7,485; (1920) 10,703.

MURRAIN, an infectious disease among domestic animals, especially cattle; an epizoötic disease or cattle-plague of any kind, especially the foot-and-mouth disease.

MURRAY, the largest river in Australia, rising in the Australian Alps about 36° 40′ S. and 147° E., its source being partly in New South Wales, partly in Victoria. It flows for a long distance W., forming the boundary between the two colonies, then passes into South Australia, where it takes a S. direction, and falls into the sea through a large shallow sheet of water called Lake Alexandrina. There is a sandbar at the mouth which impedes navigation, but small steamers ascend the river as high as Albury, 1,700 miles from its mouth. Its chief tributaries are the Murrumbidgee, the Darling, and the Lachlan. The Darling before its junction with the Murray may even be considered the main stream.

MURRAY, ARTHUR, American soldier; born in Bowling Green, Mo., in 1851, he graduated from the U. S. Military Academy in 1874 and was admitted to the bar at St. Louis in 1895. Meanwhile he had been appointed 2d lieutenant of the 1st U. S. artillery and instructor in philosophy at the U. S. Military Academy. He was acting judge-advocate for the Department of Missouri from 1887 to 1891 and acting adjutant-general of the Department of Dakota in 1891. He was professor of military science at Yale 1896-1898 and acting judge-advocate of the 1st Army Corps and of Matanzas and Santa Clara, Cuba, in 1899. He became brigadier-general in 1906 and major-general in 1911, retiring in 1915. His works include: "A Manual for Court-Martial" and "Manual of Arms."

MURRAY, DAVID CHRISTIE, an English novelist; born in West Bromwich, Staffordshire, England, April 13, 1847. He had served as reporter and then as war correspondent (1877-1878) for several newspapers, when in 1879 he published "A Life's Atonement" in "Chamber's Journal." In the same journal appeared "Val Strange" and "John Vale's Guardian." Other works are "By the Gate of the Sea"; "The Way of the World"; "Aunt Rachel"; "Old Blazer's Hero"; "The Weaker Vessel"; "A Dangerous Catspaw"; etc. In 1889 went on the stage. He died Aug. 2, 1907.

MURRAY, SIR JAMES AUGUSTUS HENRY, a British lexicographer; born in Denholm, Roxburgshire, Scotland, in 1837. He has long been compiling "A New English Dictionary on Historical Principles" (first number 1888), founded mainly on materials collected by the Philological Society. The aim of this dictionary "is to furnish an adequate account of the meaning, origin, and history of English words now in general use, or known to have been in use at any time during the past 700 years." Its purpose is "not to dictate to usage, but to record usage." Dr. Murray also published "Dialect of the Southern Counties of Scotland," and similar philological studies. He died in 1915.

MURRAY, JAMES STUART, EARL OF, Regent of Scotland, the natural son of James V. by Margaret, daughter of Lord Erskine; born in 1533. He became a warm supporter of the Reformers, and was chosen a member of the council, and one of the lords of the articles. On the return of Mary to Scotland as queen, Murray became her chief adviser, and was created first, Earl of Mar, and then Earl of Murray. He was opposed to the queen's marriage with Darnley, and has been accused of implication in the murder of the latter. He saw his sister a captive in Lochleven Castle, and was soon after named regent. Mary having escaped and taken arms, he encountered and defeated her at Langside, in 1568, and was one of the witnesses against her on her trial. The regent Murray fell by the shot of an assassin in Linlithgow, Jan. 21, 1570.

MURRAY, JOHN, founder of Universalism in the United States; born in Alton, Eng., Dec. 10, 1741; died in Boston, Mass., Sept. 3, 1815.

MURRAY, SIR JOHN, British army officer; born in 1853. Educated at Har-

row and Woolwich. Entered the Royal Artillery 1872; served during the Ashanti campaign in 1895; in Natal 1899-1900; Quartermaster-General, India, 1903-1904; Commander of the 9th Division in India in 1907-1911, and of the Imperial troops in South Africa. In 1915 General Murray succeeded Sir John French as Chief of the British Imperial General Staff. Was made a K. C. B. in 1900.

MURRAY, LINDLEY, an American grammarian; born in Swatara, Lancaster co., Pa., April 22, 1745. He received his primary education in Philadelphia in the academy of the Society of Friends. He studied the law, and practiced as a barrister; but in course of time he left the bar for the counting house, and having realized a competency, he went, in 1784, to England, and settled at Holdgate, near York. His "English Grammar" appeared in 1795. He soon after published the "English Exercises and Key." These were followed by many other school-books, and several moral treatises. He died in Holdgate, England, Feb. 16, 1826.

MURRAY BAY, capital of Charlevoix co., Quebec, Canada, on St. Lawrence river, 80 miles N. E. of Quebec, also called Malbaie. Is resort for visitors, being noted for its bathing and boating facilities. Industries include flour and timber mills, and is connected by steamer with Quebec. Pop. about 2,000.

MURRUMBIDGEE, a large river of Australia, in New South Wales, rising in the great Dividing Range, and entering the Murray after a W. course of about 1,300 miles; chief tributary, the Lachlan.

MURSHIDABAD, a town of India, on the Bhagirathi river, a branch of the Ganges; 115 miles N. of Calcutta. The chief buildings of note are the palace of Nawab (1837), the miambara, and a Mohammedan mosque. Two miles S. of the city is Motijhil or Pearl Lake; on its bank stood the palace of Suraj-ud-Dowlah, in which Clive enthroned Mir Jafar, and the English residents—among them Warren Hastings the first—dwelt. On the opposite side of the river is the old cemetery of the Nawabs, containing a mausoleum, mosque, etc. It is a busy center of trade. During the 18th century it was the capital of Bengal and a very populous city; but about the time (1790) the British made Calcutta their headquarters Murshidabad began to decline. Pop. about 30,000.

MUSACEÆ, an order of endogens, alliance Amomales. It consists of stemless, or nearly stemless, plants, with the leaves so sheathing at the base as to constitute a spurious stem; veins of the leaves parallel, and running regularly from the midrib to the margin, often splitting into fringe-like divisions.

MUSA IBN NOSAIR, the Arab conqueror of northern Africa (699-709) and of Spain (712); born in Mecca, about 660. He fell under the displeasure of the Caliph of Damascus, and died in poverty in Hedjaz, in 717.

MUSCA, in astronomy, the bee; one of Lacaille's revised S. constellations, called by Bayer, Apis. It is situated between Cruz and the South Pole. No star in it is above the fourth magnitude. In entomology, the typical genus of the family *Musidæ*. *M. domestica* is the common house-fly; *M. canaria*, the flesh-fly; *M. vomitoria* and *erythrocephala*, blue-bottle or blow-flies; *M. cæsar* and *M. cornicina*, green-bottle flies, etc.

MUSCÆ VOLITANTES (mus'sē vol-i-tan'-tēz) (literally floating flies), in physiology, the name given to ocular spectra which appear like motes or small bodies floating before the eyes. One class of these specks is a common precursor of Amaurosis, but another class is quite harmless.

MUSCARDINE, a disease very fatal to silk-worms. It arises from the attacks of a fungus (*Botrytis bassiana*), which commences in the intestines of the caterpillars and gradually spreads till it destroys them.

MUSCAT, or MASKAT, capital of the independent state of Oman or Muscat, which occupies the E. continuation of Arabia. It is surrounded by a wall, and defended by forts planted on the rocky heights above. Its total trade reaches the value of $6,000,000 annually, the chief exports being pearls and fish, in which its coastal waters are extraordinarily rich, and salt, dates, drugs, dyestuffs, horses, and the imports chiefly coffee, rice, sugar, piece-goods, oil, etc. Though a very ancient place, Muscat remained small and of little importance till the Portuguese took posession of it in 1508. It was subsequently governed by native rulers (*imams*), who in the 17th century succeeded the Portuguese also as masters of Zanzibar and some places on the E. coast of Africa. The city has been for many years under British influence. Pop. est. about 45,000.

MUSCATEL, the name given to many sweet, strong French and Italian wines, whether white or red. Among the finest are the white Rivesaltes and red Bagnol

from Roussillon, and the Lunel from the Pyrenees, the Lacrymæ Christi of Naples, etc. Fine varieties are yielded by Syracuse, Sardinia, the Cape, Canary Islands, Corfu, Crete, and Cyprus.

MUSCATINE, a city and county-seat of Muscatine co., Ia.; on the Mississippi river, and on the Chicago, Rock Island and Pacific, the Chicago, Milwaukee and St. Paul and the Muscatine North and South railroads; 211 miles W. of Chicago. Here are a County Hospital, County Insane Asylum, public library, other public and semi-public institutions, National and State banks, waterworks, electric street railroad, electric lights, and several daily and weekly periodicals. It has large lumbering interests, pork-packing houses, flour mills, fruit and vegetable canneries, rolling mills, foundries, large sawmills, plumbers' supply factory, etc. Pop. (1910) 16,178; (1920) 16,068.

MUSCLE AND MUSCULAR TISSUE, tissue specially distinguished by its contractile power, the instrument by which all the sensible movements of the animal body are performed. If examined under a high magnifying power the fibers of which it is composed are found to exist under two forms, which can be distinguished from one another by the presence or absence of very close and minute transverse bars or stripes. The fibers of the voluntary muscles, or those whose movements can be influenced by the will, as well as the fibers of the heart, are striped; while those of the involuntary muscles, the muscular structures over which we have no control, as, for example, the muscular fibers of the intestinal canal, uterus, and the bladder, are unstriped. On examining an ordinary voluntary muscle with the naked eye, we observe that it presents a fibrous appearance, and that the fibers are arranged with great regularity in the direction in which the muscle is to act or contract. On closer examination it is found that these fibers are arranged in fasciculi, or bundles of various sizes, inclosed in sheaths of areolar tissue, by which they are at the same time connected with, and isolated from, those adjoining them; and when the smallest fasciculus visible to the naked eye is examined with the microscope, it is seen to consist of a number of cylindrical fibers lying in a parallel direction, and closely bound together. These primitive (or, as some writers term them, the ultimate) fibers present two sets of markings or striæ, viz., a longitudinal and a transverse set.

Muscles vary extremely in their form. In the limbs they are usually of considerable length, surrounding the bones and forming an important protection to the joints; while in the trunk they are flattened and broad, and contribute very essentially to form the walls of the cavities which they inclose. Muscles derive their names (1) from their situation — as the temporal, pectorals, glutæals, etc.; or (2) from their direction — as the rectus, obliquus, etc., of which there may be several pairs; or (3) from their uses — as the masseter, the various flexors and extensors; or (4) from their shape — as the deltoid, trapezius, rhomboid, etc.; or (5) from the number of their divisions — as the biceps and triceps; or (6) from their points of attachment — as the sterno-cleidomastoid, the genio-hyo-glossus, the sterno-thyroid, etc. In the description of a muscle we express its points of attachment by the words origin and insertion; the former being applied to the more fixed point, or that toward which the motion is directed, while the latter is applied to the more movable point. The skeleton, which may be termed the locomotive frame work, may be regarded as a series of levers, of which the fulcrum is, for the most part, in a joint, viz., at one extremity of a bone; the resistance (or weight) at the further end, and the force (or muscle) in the intermediate portion. The great and characteristic property of muscular tissue, that of shortening itself in a particular direction when stimulated, is called contractility. The stimulus may be direct irritation by mechanical means, or by galvanism, or by some chemical substances, but in the living body the muscular fibers are, in most cases, made to contract by the immediate influence of the nerves distributed among them, which are consequently termed motor nerves, and are under the influence of the will.

MUSE, in mythology, one of nine nymphs or inferior divinities, distinguished as the peculiar protectresses of poetry, painting, rhetoric, music, and generally of the belles-lettres and liberal arts. They were the daughters of Zeus and Mnemosyne (Memory). Originally there appear to have been only three of these divinities, and their names, Mneme, Melete, and Aœde, or Memory, Reflection, and Song, sufficiently show the nature of the faculties over which they were supposed to preside.

MUSEUM (-zē'-), a building or apartment appropriated as a repository of things that have an immediate relation to literature, art, or science, and where the objects may be inspected by those who are curious in such matters. Of

the museums of Great Britain the British Museum is the largest; being perhaps the greatest in the world. Museums illustrative of the industrial arts, though of recent origin, are of great importance. Foremost among institutions of this kind in Great Britain may be instanced the South Kensington Museum. All the chief capitals of Europe and many other large cities have valuable museums. New York City has two noted museums, the Metropolitan Museum of Art, and the American Museum of Natural History; Boston has a Museum of Fine Arts; Chicago, the Field Columbian Museum; Philadelphia, the Bourse and Commercial Museums; Pittsburgh, the Carnegie Museum and Art Gallery; and there are other notable institutions of this character connected with several of the universities and large colleges, and also established in various cities by individual munificence.

MUSHROOM, or **AGARIC**, a genus of fungi, of the sub-order *Hymenomycetes*, having a hymenium of unequal plates or gills on the lower side of the pileus. The species are very numerous. Many are poisonous, many are edible, and some are among the most esteemed fungi.

MUSIC, originally, any art over which the muses presided; afterward, that science and art which deals with sounds as produced by the human singing voice, and by musical instruments. The science of music includes several branches: (1) The physics, that is, the analysis of the cause and constitution of sound, the number of atmospheric vibrations which produce given sounds, and the arrangement of series of sounds standing in a definite relationship to each other as regards their vibration-number (scales); also, the form and construction of instruments with reference to the character and nature of the sounds they produce; and, also the apparatus of experimental acoustics, such as sound-measures (tonometers, sirens, tuning forks, etc). These branches, of course, involve problems of pure mathematics. (2) The physiology of music. This deals with the construction and functions of the sound-producing organs of the human body, the vocal chords, larynx, etc., and, also, with the receptive organ of sound, the ear. (3) The mental philosophy of music, that is, the effect of music on the emotions and intellect. The art of music includes the formation of melody (sounds in succession), and harmony, and counterpoint (sounds in combination); also, the "technique" of voice production and singing, and of performing on musical instruments. The earliest efforts of mankind in music consisted in the elevation and depression of the voice in reading sacred writings and lyrical poetry, and in the construction of pipe instruments, tubes pierced with holes (flutes), tubes containing a vibrating tongue (reed instruments), and collections of pipes in which the sound was produced by making the breath or other column of air impinge on a sharp edge (the syrinx and the organ), in using the lips as a cause of vibrations in open tubes (the trumpet family), in the stretching of strings in a frame (the lyre and harp family), in placing stretched strings over a resonance box (the lute and guitar family), in the use of the "bow" to excite vibrations (the viol family), and in the striking of strings over a resonance box by means of hammers (the dulcimer and harpsichord and pianoforte family).

The ancient signs for the elevation and depression of the voice in reading were called accents (not stress, but the raising and the dropping of the voice without adding to its force). These led to a system called neumes; these again led to signs called notes, the position of which on lines showed their pitch, and the shape of which determined their duration. The use of letters in various positions to represent definite sounds was an essential element of ancient Greek music, which, however, was discarded at the revival of music in the early Christian Church; but the system has, in an improved form, been revived in the modern tonic sol-fa system.

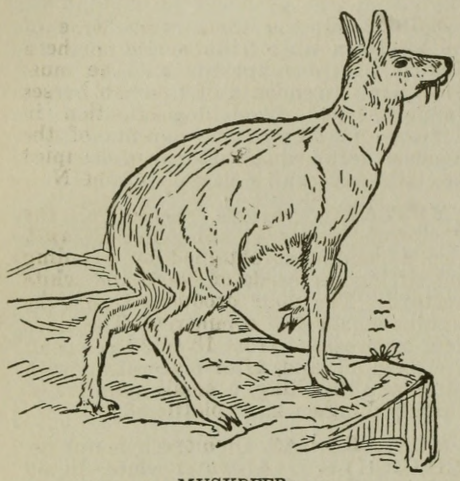
MUSK, *Mimulus moschatus*, a garden-plant of musky odor from the region of the Columbia river. Also *Erodium moschatum*, musky stork's-bill, a rare plant, with pinnate leaves smelling of musk. Chemically it is an odoriferous, resinous substance obtained from the male MUSKDEER.

MUSKDEER (*Moschus moschiferus*), a ruminant Ungulate forming a special family of the *Artiodactyla*. The musk-deer is an inhabitant of the mountainous regions of central Asia from the extreme N. to as far S. as Cochin-China and Nepal. There is only one species, with perhaps four well-marked varieties.

MUSK DUCK (*Cairina moschata*), a duck wild in Guiana, etc., where the males fight savagely with each other. It is often reared in poultry yards. Corrupted into Muscovy duck; called also Barbary duck. Also (*Biziura lobata*), an Australian duck.

MUSKEGON, a city and county-seat of Muskegon co., Mich.; on Lake Michigan at the mouth of the Muskegon river,

and on the Père Marquette, the Grand Rapids, and Indiana, the Grand Trunk and interurban railroads. Its harbor is one of the best on the lake, and steamboats daily ply between it and Chicago, Milwaukee, and other lake ports. Here are the Hackley Manual Training School,



MUSKDEER

Hackley Public Library, hospitals, several National banks, electric lights, street railroads, county court house, and several daily and weekly newspapers. It has large lumbering interests, tanneries, woolen mills, marble and granite works, furniture factories, a piano factory, engine and boiler shops, iron and steel works, large celery farms, etc. Pop. (1910) 24,062; (1920) 36,570.

MUSKEGON HEIGHTS, a town in Muskegon co., Mich. It is on the Grand Rapids and Indiana railway, also on the Grand Rapids and Muskegon railway, the Grand Trunk and the Père Marquette. Pop. (1910) 1,690; (1920) 9,514.

MUSKINGUM COLLEGE, an educational institution in New Concord, O.; founded in 1837 under the auspices of the United Presbyterian Church; reported at the close of 1919: Professors and instructors, 16; students, 475; volumes in the library, 9,000; endowment, $290,000; grounds and buildings valued at $300,000; income, $80,000. President, J. K. Montgomery.

MUSKINGUM RIVER, the chief river of eastern Ohio. It is formed by the junction of the Walhondin and Tuscarawas rivers and flows in a S. E. direction for 112 miles, through an important agricultural region. It empties into the Ohio river at Marietta. The river is navigable for about 100 miles from its mouth.

MUSKMELON (*Cucumis melo*), a delicious melon of a musky fragrance, much liked in the United States. See MELON.

MUSKOGEE, a city of Oklahoma, the county-seat of Muskogee co., about 130 miles E. of Oklahoma City. It is situated on the Missouri, Kansas, and Texas; the St. Louis and San Francisco, the Midland Valley, and the Missouri, Oklahoma, and Gulf railroads. It has important public buildings, including a handsome post office, a high school, a library, and several clubs. There is also an excellent system of public parks. It contains the St. Joseph College, the Spaulding Female Institute, and the Oklahoma Woman's College. Its industries include hardware, factories, railroad shops, steel works, oil-well supply works, and cotton goods factories. It is surrounded by important agricultural and stock-raising region. Oil and natural gas are found in abundance. It has the commission form of government, adopted in 1910. Pop. (1910) 25,278; (1920) 30,277.

MUSKOKA, lake and islet region of Ontario, Canada, on Muskoka river. Area covering over 4,000 square miles includes nearly 1,000 lakes interspersed with hundreds of islets, surrounded by forest scenery. Summer visitors crowd to the resort for bathing, boating, and fishing.

MUSK OX (*Ovibos moschatus*), considered by some naturalists to be a connecting link between the sheep and the ox, whence its generic name. It is found in herds of from 10 to 30, in Arctic America N. of lat. 60°. It is covered with brown hair, nearly a yard in length, and a thick woolly under fur.

MUSKRAT, a name common to several rodents having little in common except the secretion of a musky substance, or the diffusion of a musky odor; specifically *Fiber zibethicus*, a beaver-like water rat. The toes are webbed, and the tail is flattened laterally. They inhabit the banks of lakes and rivers in this country, and construct dwellings somewhat resembling small haystacks. Their coloring is so much like that of the muddy banks on which they dwell, that they have been often mistaken for lumps of mud till their movements betrayed them. They are hunted for their fur, which is much valued. Called also musquash and ondatra.

MUSLIN, a bleached or unbleached thin cotton cloth, white, printed, or dyed.

Varieties are known as Swiss, buke, mull, jaconet, lawn, saccharilla, harness, leno, nainsook, seerhand, foundation, cambric, cord, check, figured, long-cloth, tamboured, muslinet, organdie. Other very different styles of fabric are also indifferently called muslins, and the term is used differently on the respective sides of the Atlantic, in England being confined exclusively to white goods.

MUSSEL, an individual of the genus *Mytilus*. The fry are found in water a few fathoms deep, and grow to maturity in about a year. Knapp states that 40,000,000 *Mytilus edulis* are annually dredged in the Frith of Forth, to be used for bait in the deep sea fishery. Though prized and largely used for human food, mussels sometimes prove deleterious, and fatal effects have followed their consumption. Mussels, the family *Mytilidæ*.

MUSSET, ALFRED DE (mü-sā'), a French poet; born in Paris, France, Dec. 11, 1810. After completing his education at the College of Henry IV., where his fellow-pupil and intimate friend was the Duke of Orleans, son of Louis Philippe, he essayed the most diverse studies. The law, medicine, finance, painting, were in turn engaged in, in turn abandoned. In 1830, he put forth a small volume of poetry, entitled "Stories of Spain and Italy," which was received with great favor. A celebrity at 23, the young poet made a journey to Italy with George Sand, under the name of confidential secretary. During his last years, he gave himself up to play, and even grosser pleasures. His last volume of verse was published in 1850, and showed a premature decay of the author's powers. He was nevertheless elected a member of the French Academy, in 1852. His best works are his poems, "View from an Armchair"; "The Cup and the Lips"; "Of What do Young Girls Dream?"; "Namouna"; "Rolla"; and his two exquisite dramatic pieces, "A Caprice," and "A Door Should be Open or Shut." He died in Paris, May 2, 1857.

MUSSORGSKI, MODEST PETROVITCH, Russian composer; born in Karev, Pskov, in 1839, he entered the St. Petersburg Military Academy, but resigned his commission to devote himself to musical composition. He wrote an incomplete opera, "Salammbo," and brought out a number of songs which made him well known. His masterpiece, however, was his "Boris Godunov" which appeared in 1874, and which, considerably revised, has become a standard Russian opera. An opera almost equal in fame was "Khovanstchina," which appeared in 1880. He left behind three uncompleted operas, a fantasie, suite for the piano and choral works. He died in 1881.

MUSSULMAN, a Moslem or Mohammedan.

MUST, the juice of the grape, which by fermentation is converted into wine.

MUSTANG, the small wild horse of southwestern United States and northern Mexico. It is supposed that the mustangs are descendants of Spanish horses which escaped from domestication in Mexico, and became the parents of the immense herds which afterward occupied the plain and prairie regions of the N.

MUSTARD, various species of the cruciferous genus or sub-genus *Sinapis*. Also a condiment obtained by grinding and sifting the seeds of black and white mustard. The flour produced forms the genuine mustard of commerce. The seeds yield by pressure from 18 to 36 per cent. of a fixed oil, and, after macerating with water and distilling, a small quantity of a highly pungent and volatile oil.

MUSTARD GAS. Dichlorethylsulphide, $(CH_2ClCH)_2S$. A water-white liquid boiling at 219° C., first prepared by the German chemist, Victor Meyer, in 1886, and first used in warfare by the Germans at Ypres, July 20, 1917. In the following February, the English chemist, Pope, reported the discovery of a process of manufacture by absorbing ethylene gas in sulphur monochloride. His process, with some modifications developed by the U. S. Chemical Warfare Service, was adopted by the Allies throughout the balance of the war.

The liquid has a corrosive effect on the skin, raising painful blisters, slow in healing, and has a tendency to eat further and further in, sometimes even corroding the bone beneath the flesh. The vapor, when strong, also blisters, particularly when the skin is moist or greasy. The eyes, being moist, readily absorb the gas, are rendered very sore and roll up under the lids, staying up for some days, after which the sight is usually recovered. The vapor also attacks the lungs, sometimes resulting in complete destruction of the tissue. When it was first introduced, 4 per cent. of all mustard gas casualties were fatal, but toward the end of the war fatalities dropped to less than ½ per cent.

The gas is very persistent and a shelled district takes from two to seven days to clear. Rain washes it into the soil, but warm sun will bring it out again. At low temperatures, it becomes a yellowish grease, and to prevent freezing in the

shells usually from 15 to 25 per cent of a solvent is added, chlorbenzene or carbon tetrachloride being commonly employed for this purpose.

MUSTELIDÆ, a genus of carnivorous mammals, section Arctoidæ, forming a large group, widely diffused in the N. temperate regions. They have broad flattened skulls, low vermiform bodies, short legs, and feet fitted either for running, digging or swimming. The family may be naturally divided into three sub-families: *Mustelinæ*, *Lutrinæ*, and *Melinæ*.

MUTATION, theory that evolution progresses by quick changes rather than gradual transformations. The idea long suggested was first brought out in fullness by Professor de Vries of Amsterdam in 1901. His experiments showed that mutation, not natural selection, led to the development of new characters and new species. He showed it probable that mutation really brought into being something new, without intermediate processes and transitions. The mutant remained settled as a new species. Almost simultaneously a Russian investigator showed that the cultivated varieties of plants had come suddenly into being through mutation, without the slow and imperceptible development previously thought necessary, and the theory is now generally accepted by scientists.

MUTE, a small instrument used to modify the sound of the violin or violoncello. It is made of hard wood, ivory, or brass, and is attached to the bridge by means of a slit, its three legs standing between, but clear of, the strings.

MUTINY, the unlawful insurrection or revolt of soldiers or seamen against the authority of their commanders; open resistance of officers or opposition to their authority.

MUTSU HITO (möt'sö hētō), Mikado (or Emperor) of Japan; born Nov. 3, 1852. He ascended the throne in 1867, and married Princess Haruko in 1869. His children are Prince Yoshihito, born in 1879, and proclaimed Crown Prince in 1889, and three princesses. His reign was marked by great reforms; and the feudal system, which had impeded the general progress of the country, was abolished. He died in 1912. See JAPAN.

MUTTRA (mut'trä), or **MATHURA** (ma'thö-rä), a town of India, in the Northwest Provinces, on the right bank of the Jumna, 30 miles above Agra. For centuries it has been a center of the Buddhist faith; the surrounding country swarms with associations of Krishna and Balarama. There are numerous temples and mosques; the river is lined with magnificent flights of stairs, leading down to the bathing places in the sacred river; large numbers of pilgrims resort to the city on the occasion of its religious festivals; and troops of monkeys and turtles are supported by the charity of the gentle-hearted people. The city was sacked by Mahmud of Ghazni in 1017; its temples were destroyed by a native sultan in 1500, and by Aurungzebe in 1669; and it was plundered by the Afghans in 1756. In 1803 it passed into the hands of the British. Pop. about 60,000. The district has an area of 1,453 square miles.

MUZAFFARPUR, a city of British India, the capital of a district of Bengal. It has several important educational institutions and has manufactories of carpets and cloth. In the neighborhood are important saltpeter mines. Pop. about 50,000.

MYCALE (mik'a-lē), in ancient geography, a promontory of Ionia, in Asia Minor, opposite the island of Samos, where the Persian army under Tigranes was defeated at this Ionian city of Asia Minor, by the Greeks, under Leotychides, King of Sparta, and Xanthippus, in September, 479 B. C.

MYCELIUM (-sē'-), the vegetative part of fungi which is not concerned in spore bearing. It may consist simply of a much-elongated cell growing from the spore, or of a chain of cells, but in the majority it is a tissue of interlaced branched filaments of hyphæ, loosely united in many molds, membranous in dry rot, compact and tuberous in mushrooms.

MYCENÆ, or **MYCENE** (mī-sē'nē), an ancient city of Greece, nomarchy of Argolis, near the village Krabata, 22 miles S. W. of Corinth. It is said to have been founded by Perseus, 1457 B. C. It was the capital of the kingdom of Agamemnon, and was at that time the principal city of Greece. About 468, it was destroyed by the inhabitants of Argos, and never after regained its former prosperity. Its ruins are still to be seen in the neighborhood of Kharvati, and are specimens of Cyclopean architecture. The most celebrated is the "Gate of Lions," the chief entrance to the ancient Acropolis, and receiving its name from two immense lions sculptured on a block of bluish limestone above the gate. Continued exploration of the site has revealed a wealth of material belonging to different ages of history. The name Mycenæan has been given to the period

directly preceding the age of Hellenic culture.

MYCONI (mik'ō-nē (anciently Myconos), an island in the Grecian Archipelago, one of the Cyclades, about 21 miles in circuit; produces barley, raisins, and figs, with some wine. The inhabitants are chiefly employed in seafaring pursuits. Capital, Myconi, a seaport.

MYELITIS (-ī'tis), inflammation of the spinal cord; (1) acute, (2) by ramollissement, (3) by undefined suppuration, (4) by abscess.

MYERS, CORTLAND (ROOSA), clergyman; born at Kingston, N. Y., in 1864, he graduated from University of Rochester in 1887 and from Rochester Theological Seminary in 1890, in which year he was ordained a Baptist minister. He was pastor at Syracuse till 1893, at Brooklyn till 1909, and since then at Tremont Temple, Boston. His works include: "The Best Place on Earth"; "American Guns"; "Why do Men Not Go to Church"; "Making a Life"; "Where Heaven Touched the Earth."

MYERS, FREDERIC WILLIAM HENRY, an English author; born in Keswick, England, Feb. 6, 1843. He was classical lecturer at Trinity College, Cambridge, 1865-1868. He wrote: "St. Paul" (new ed. 1879), in verse; "Wordsworth" (1880), in "English Men of Letters"; "Renewal of Youth, and Other Poems" (1882); "Essays, Modern and Classical" (1883); "Science and a Future Life" (1893), a volume of essays; etc. He was a constant contributor to English reviews. He died in 1901.

MYERS, HENRY L., United States Senator from Montana; born in the State of Missouri Oct. 9, 1862, and educated in the public schools of that State. Admitted to the bar in 1885 and practiced law at Boonville and West Plains, Mo., for the succeeding eight years. In 1893 he moved to Montana and from 1899-1903 was a member of the State Senate. In 1907 he was appointed a United States District Judge; resigned when elected United States Senator in 1911. Senator Myers was the Democratic candidate to succeed himself in 1917, and was elected for the term 1917-1923.

MYERS, WILLIAM SHIELDS, chemist; born in Albany, N. Y., in 1866, he attended the Albany Academy and Rutgers College, studying also at Munich, Berlin, and London. He became assistant chemist at the N. J. Experiment Station, 1888-1889; chemist at the Lister Chemical Works, 1892-1893, and associate professor of chemistry at Rutgers College till 1901. Since 1901 he has been director of the Chilean Nitrate Committee for the U. S. and colonies. He joined with the late Prof. Voorhees in plan for agricultural education in Mexico, accepted by Government.

MYNA (*Acridotheres* or *Gracula* of Cuvier), a genus of birds of the family *Sturnidæ*, of which there are seven species ranging over the whole Oriental region and Celebes. The head is more or less crested, and some have a naked space behind and under the eye; the bill is rather short, stout, and compressed; the tail is rounded; the feet are strong, the toes long, and the claws moderately curved.

MYOCARDITIS, inflammation of the covering of the heart. In cases of acute inflammation, infection is generally the cause. Myocarditis is a malady secondary to diphtheria, typhoid fever, scarlet fever, spinal meningitis, variola, erysipelas, malaria, rheumatism, and influenza. Chronic myocarditis results from sclerosis of the coronary arteries supplying blood to the heart muscle.

MYOPIA, near or short sight, a defect of the eye, produced generally by too great convexity of the cornea or crystalline lens, causing the focus to be placed not on the cornea, but in front of it. It occurs in early life from too great use of the eyes on minute objects, as the print in a book, especially by imperfect light. It is corrected by doubly-concave spectacles. As a rule the defect diminishes with the advance of age.

MYRICA, sweet gale; bog-myrtle; the typical and only genus of the order *Myricaceæ*.

MYRICK, HERBERT, American editor and publisher; born at Arlington, Mass., Aug. 20, 1860. Educated at Mass. Agricultural College and at Boston. Many years president of the Phelps Publishing Co. and editor of "Farm and Home," Springfield, Mass. President of the Orange Judd Company and director of their farm papers: "Northern Farmstead," Minn.; "Southern Farmer," Atlanta; "American Agriculturist," New York, and "New England Homestead," Springfield, Mass. Has built the Myrick Building, Springfield, Mass. Has lectured extensively on agricultural subjects. Author of technical books on agriculture. Has published "Co-operative Finance" (1912); "Federal Loan System" (1916).

MYRISTIC ACID. $C_{13}H_{27}COOH$. Occurs in the form of trimyristin $C_3H_5(C_{14}H_{27}O_2)_3$, in the oil of the cocoanut, nutmeg, quince seeds, and in butter and

wool fat. It may be prepared artificially by melting stearolic acid with potash. It crystallizes in needles with a melting point of 53.8° C.

MYRMIDON (mur'mi-don), in Greek mythology, one of the followers whom Achilles led from Phthia to the Trojan war. According to one version of the myth, Zeus deceived Eurymedusa, daughter of Cleitus, in the form of an ant, murmex, and became the father of Myrmidon, the eponym of the Myrmidons. The Homeric poems exhibit the Myrmidons as warriors who cannot act except at the bidding of Achilles.

MYRON, a celebrated Greek sculptor; born in Eleutheræ, Bœotia, about 480 B. C. He was a pupil of Ageladas, and the rival of Polycletus. He worked in marble, wood, and metal, and especially distinguished himself by his skillful representations of animals. His most admired work was the bronze figure of a "Cow Lowing," which was still extant at Athens in the time of Cicero.

MYRRH, in botany, *Balsamodendron myrrha;* also the genus *Myrrhis.* In chemistry, a gum resin which exudes from *Balsamodendron myrrha*, a shrub growing in Arabia and Abyssinia.

MYRTACEÆ, myrtle-blooms; an order of epigynous exogens, alliance Myrtales. It consists of trees or shrubs, with opposite or alternate entire leaves, usually with transparent dots and a vein running parallel to the margin.

MYRTLE, *Myrtus communis*, a native of Persia. By distillation it yields an essential oil, used in perfumery. About 100 pounds of the leaves yield only five ounces of the perfume called in France *eau d'ange* (angel water).

MYSIA (mish'iä), a district of ancient Asia Minor, having the Propontis (Sea of Marmora) on the N., the Ægean on the W., Lydia on the S., and Bithynia and Phrygia on the E. The Troad (Land of Troy) was one of its subdivisions.

MYSORE (mī-sōr'), or **MAISUR** (mī-sör'), a native state of southern India, bounded by districts of the Madras presidency; area 27,936½ square miles; pop. about 6,000,000. Mysore is an extensive tableland much broken by hill ranges and deep ravines, and is divided into two portions, a little N. of lat. 13° N., by the watershed between the Kistna and the Kaveri rivers. Numerous isolated rocks (drugs), rising to 4,000 or 5,000 feet, are a peculiarity of the country, and have been mostly converted into hill fortresses. The rivers are used for irrigation purposes, but are not navigable. The climate of the higher districts is during a great portion of the year healthy and pleasant. The annual value of the exports, chiefly betel nut and leaves, coffee, ragi, gram, cotton, piece-goods, cardamoms, rice, silk, and sugar, is above $6,000,000. The imports, consisting mainly of piece-goods, cloth, wheat, silver, gold, cotton, rice, silk, betel leaves, and pepper, are over $7,500,000. The ruinous misgovernment of the native prince led the British to assume the administration in 1831; but in 1881 Mysore was restored to the native dynasty. The famine years (1876-1878) told with great severity on that state. Capital, Mysore, situated amid picturesque scenery on a declivity formed by two parallel ranges running N. and S. 245 miles W. S. W. of Madras, is a prosperous, well-built town with broad, regular streets, and substantial houses and public buildings. On the S. side stands the fort, which incloses the rajah's palace; its chief object of interest is a magnificent chair or throne of fig-wood, overlaid with ivory and gold. Pop. about 75,000.

MYSTERIES, certain rites and ceremonies in ancient, chiefly Greek and Roman, religions, only known to and practiced by, congregations of certain initiated men and women, at appointed seasons, and in strict seclusion. The origin, as well as the real purport of these mysteries, is all but unknown. The mysteries, as such, consisted of purifications, sacrificial offerings, processions, songs, dances, dramatic performances, etc. The most important mysteries were, in historical times, those of Eleusis and the Thesmophorian, both representing the rape of Proserpina, and Ceres' search for her: the Thesmophorian mysteries being also in a manner connected with the Dionysian worship. There were further those of Zeus of Crete (derived from a very remote period), of Bacchus himself, of Cybele, and Aphrodite—the two latter with reference to the Mystery of Procreation, but celebrated in diametrically opposed ways, the former culminating in the self-mutilation of the worshiper, the latter in prostitution. Eleusinian mysteries can be traced back to the 7th century B. C. In the time of Herodotus as many as 30,000 people attended them; and between 480-430 B. C., the period of Athens' highest power and of the Eleusinian mysteries' greatest fame, the number must have been much greater. Toward the end of the classical periods, the mysteries degenerated into the most shameless public orgies, and their days were numbered.

MYSTERY, a kind of mediæval drama, or dramatic composition, the characters and events of which were drawn from sacred history. They were totally devoid of invention or plot, following the sacred narrative of the legends tamely and literally. They were also called MIRACLE PLAYS. Mysteries were succeeded in the 16th century by moralities, in which we find the first attempts at dramatic art, as they contain some rudiments of a plot, and even attempted to delineate character and to paint manners.

MYSTICISM, the views of the mystics; specially, that they possessed more direct communion with God than did other Christians. Individuals have more or less held this view in every age of the Church. The creed of modern mysticism may be found in the universally popular "Imitation," attributed to à Kempis, somewhat less known are the poems of Madame Guyon, translated by Cowper. The piety breathed in her verse is most ardent, though at times the language used is more familiar than is usually addressed to God.

MYTH, in general, a fiction framed unconsciously, not a willful falsehood. Such myths arose most copiously in the infancy of nations, but they do so yet, especially among young people or the uneducated, there being the closest analogy between the mind of early man and that of a child or of an untaught person.

MYTHOLOGY, a term applied to the collected myths of a nation, sometimes to the scientific study of myths. In the former sense see the names of the various gods and heroes. Mythology in the latter sense has for its object not to ascertain why men believe in gods—that is rather the business of the science of religion—but, granted the belief, why men tell these (sometimes extraordinary) stories about them.

MYTHRAS (mith'ras), or **MIHIR** (mi-hēr'), the sacred being enthroned in the sun whom the Ghebers worship.

MYXŒDEMA, the name generally accepted for a diseased condition first described by Sir William Gull in 1873. It occurs in adults, generally females, and is characterized by widespread changes in nutrition and by a thickening of the subcutaneous tissues, most noticeable in the face (which becomes enlarged, swollen-looking, and expressionless) and the hands, with a simultaneous dulling of all the faculties and slowing of the movements of the body. A precisely similar condition occurs in many cases where the thyroid gland has been removed for disease. Myxœdema is very slow in its progress, but undoubtedly tends to shorten life. It greatly resembles cretinism, except that the mental condition is much less affected, and that the deformities resulting from arrested development are not present.

N

N, n, the 14th letter and the 11th consonant in the English alphabet. It is a dental nasal, and is formed by placing the tip of the tongue against or close to the root of the upper teeth, and emitting a voiced sound through the nose. Its ordinary sound is that heard in not, ton, done, etc., but before gutturals, as g or k, it has a guttural nasal sound, almost equivalent to ng, as in sink, link, finger, sing, song, etc. When, however, the gutturals belong to a different syllable the n generally retains its ordinary sound, as in congratulate, engage, engine, etc. N final after m is silent, as in autumn, hymn, condemn, etc. When preceded by g, k, m, and p at the beginning of a word, the n alone is sounded, as in gnaw, know, mnemonics, pneumatic, etc. S is always sounded before initial n, as in snow.

NABATÆANS, a people of northern Arabia. They took possession of the country once occupied by the Edomites; and in the beginning of the 3d century B. C. they were one of the most powerful among the Arab tribes, warlike, with a force of 10,000 fighting men, nomadic, and busy carriers of merchandise between the East and the West. By the 1st century B. C. they had shaped their power into a kingdom; in the time of St. Paul their king Aretas, who died in A. D. 40 after a reign of 48 years, was master of Damascus and Cœle-Syria. Trajan, in 105, captured their stronghold and put an end to their kingdom. They possessed a certain measure of culture, derived from the Syrians. The language of their coins and inscriptions is Aramaic.

NABLUS (the ancient Shechem), (corrupted from the Greek Neapolis), a town of Palestine, on the highest part of the pass, between Mounts Ebal and Gerizim, that leads from the Mediterranean to the Jordan. In the same valley or gap are Jacob's Well, the Tree of the Sanctuary, and Joseph's grave. At first a Canaanite city, it was destroyed by Abimelech, a son of Gideon the Judge. Here Rehoboam was crowned King of Israel. The place still is the religious center of the Samaritans. The Greek city gave birth to Justin Martyr, and suffered during the Crusades.

NABUCO, JOAQUIM, Brazilian political writer. Born in Recife in 1849, he was educated as a lawyer and became an attaché with the Brazilian legation in Washington. He was elected to the Brazilian Chamber in 1878, and was active in the movement to abolish slavery. When Brazil adopted a republican constitution, he left politics and engaged in writing a history of the reign of Pedro II. He represented Brazil in London from 1901 to 1905, and in Washington from 1905 till his death. His works include: "Pensées detachées et souvenirs" (1906). He died in 1910.

NACHTIGAL, GUSTAV (näh'tē-gäl), a German traveler; born in Eichstedt, Germany, Feb. 23, 1834. He studied medicine and served as army surgeon till 1863. A long and successful journey, in the course of which he visited, the first of Europeans, the native states of Tibesti, Borku, and Wadai, put him in the forefront of modern travelers. His vast collection of most valuable information was written down in the three volumes of "Sahara and Sudan" (1879-1889). In 1884 Nachtigal was commissioned to annex for Germany Togoland, Kamerun, and Lüderitzland (Angra-Pequena) on the W. coast of Africa. He died on the return journey off Cape Palmas, April 19, 1885.

NADAB, a King of Israel, and son of Jeroboam, whom he succeeded in 954 B. C. In the second year of his reign, he led "all Israel" against Gibbethon, but was slain during his siege of that city, by Baasha, son of Ahijah, who mounted the throne, and reigned 23 years, during which he "smote all the house of Jeroboam; he left not to Jeroboam any that

breathed," as was prophesied by Ahijah the Shilonite.

NADAUD, GUSTAVE (nä-dō'), a French composer; born in Roubaix, France, Feb. 20, 1820. He published: "Songs" (1849); "More Songs" (1873); "Unpublished Songs" (1876); and "New Songs" (2d ed. 1892). He composed the music for many of them. He also wrote a novel called "An Idyll" (2d ed. 1886). He died in Paris, April 28, 1893.

NADIR SHAH, Shah of Persia; born in the province of Khorasan, about 1688. For the first years of his reign justice and moderation were the principles of his power; but as he advanced in years he gradually threw off all consideration, and ruled by his selfish, arbitrary, and unbridled will; while in regard to his captives the most inhuman and barbarous conduct marked his career. He put out the eyes of his own son, simply because he was beloved by the people; and exercised such malignant cruelty on all, that his officers, discovering he meant to destroy them all, formed a league to save their lives and rid the world of an intolerable monster, entering his tent by night, murdered him as he slept, and placed his nephew Ali on the musnud in June, 1747.

NAGA HILLS, a district of British India, the S. E. extremity of Assam; area 6,400 square miles approximately; pop. 130,300. It consists of a mountainous region, covered with jungle and forest, the haunt of various wild animals, and is inhabited by the aboriginal Nagas and other semi-savage people, whose incessant raids into the more orderly British provinces occasioned much trouble in 1832-1881. In that year their country was made an administrative district, and garrisoned with a native regiment.

NAGANO, a city of Japan in the province of Hondo. It contains one of the most famous Buddhist temples of Japan. It has an important trade of textiles and other goods. Pop. about 40,000.

NAGASAKI, a seaport of Kyūshū, Japan, and for more than two centuries the only gate of communication for that empire with the outer world. Its harbor, famous for its beauty, is a narrow inlet about 3 miles in length. Near its head, beside the native town, is the low, fan-shaped island of Deshima, where the Dutch factory was situated. From 1637 to 1859 the Dutch traders were immured in this prison of 250 x 80 yards, the monotony of their lives being varied by the arrival of the yearly ship from Batavia, and the annual journey to Yedo, when presents were made to the Shôgun. Chinese traders were also permitted to carry on a limited trade. In 1859 Nagasaki became one of the five open ports. The great Takashima coal mine, on an island 8 miles seaward of the entrance to the harbor, serves to give importance to Nagasaki as a coaling station. Nagasaki also possesses a fine dockyard and patent slip. The city has a large trade. Its foreign commerce amounts to over $10,000,000 annually. At the mouth of the harbor is the small island of Pappenberg (Takaboko), from which 300 Christians are said to have been hurled in the frightful persecutions of the 17th century. Pop. about 165,000.

NAGOYA, a city of Japan, 75 miles E. by N. of Kioto, capital of the province of Owari; it has a celebrated castle, erected in 1610 by 20 great feudal lords, and regarded as one of the wonders of the town, noted manufactures of porcelain, cloisonné, and fans. The town is connected by a nearly continuous street of 20 miles with Gifu, every house in which was overthrown in a terrible earthquake that visited the district in the autumn of 1891. Pop. about 500,000.

NAGPUR, a city of British India, the seat of administration for the Central provinces, 450 miles E. N. E. of Bombay. It lies embosomed in trees, has several handsome tanks, gardens, and temples, and extensive suburbs, but is not a healthy city, the mean temperature being 78.7°. Fine cloth fabrics are woven, and there is an active trade in wheat, salt, spices, and European goods. Here, on Nov. 26 and 27, 1817, a British force of 1,350 men, commanded by Colonel Scott, defeated a Mahratta army of 18,000 men. Pop. about 100,000.

NAGYKÁROLY, a city of Hungary. It has a handsome church and several other public buildings. Prior to the World War it had a considerable trade in linen, leather, tobacco, and bricks. Pop. about 45,000.

NAHUAS, or NAHUATLECAS, a collective name given to the Indian tribes which were the most powerful in Mexico at the time of the Spanish conquest. They had many pueblos, or towns, knew how to cultivate the ground, were skilful in gold and feather work and used hieroglyphics in writing. They were quarrelsome and were constantly at war among themselves. They offered human sacrifices and had other degrading customs. After the fall of Mexico in 1521 they lost much of their independence and drifted into a state of semi-slavery to the Spaniards. About 2,000,000 Indians

of that region are now classed as Nahuas. They are sometimes called Aztecs.

NAHUM, a prophet called the Elkoshite, from Elkosh, where he was born or where he labored; but whether it was in Galilee or in Assyria has not been determined; the time when he flourished is also uncertain. Also the 7th of the Minor Prophets: *i. e.*, of the minor books of prophecy. The theme is "The burden of Nineveh," the utter destruction of which is predicted.

NAIAD, in Greek and Roman mythology, one of certain inferior deities, who presided over rivers, wells, springs and fountains, and are represented as young, graceful, and extremely beautiful nymphs, to whom great veneration was paid and sacrifices offered. In zoölogy, one of the *Unionidæ*. In botany, the order NAIADACEÆ (*q. v.*).

NAIADACEÆ, an order of endogens, alliance Hydrales. It consists of plants living in fresh or salt water. The leaves, which are very cellular, have parallel veins and membranous interpetiolar stipules. Flowers small, often in terminal spikes; the perianth generally of two or four pieces, deciduous or wanting; stamens definite, hypogynous; stigma simple; ovaries, one or more, superior; ovule oblong, erect, or pendulous; fruit dry, one-celled, one-seeded. The naiadaceæ are of low organization. Found in temperate and tropical countries.

NAILS, flattened, elastic, horny plates, which are placed as protective coverings on the dorsal surface of the terminal phalanges of the fingers and toes. Each nail consists of a root, or part concealed with a fold of the skin; a body, or exposed part attached to the surface of the skin; and a free anterior extremity called the edge. The skin below the root and body of the nail is termed the matrix, from its being the part from which the nail is produced. This is thick, and covered with highly vascular papillæ, and its color is seen through the transparent horny tissue. Near the root the papillæ are smaller and less vascular; hence the portion of nail corresponding to this part of a whiter color; from its form, this portion is termed the lunula. It is by the successive growth of new cells at the root and under the body of the nail that it advances forward, and maintains a due thickness, while at the same time its growth in a proper direction is insured.

NAIRN, a city of Scotland, the capital of Nairnshire. It has many factories of rope and twine and in the neighborhood are salmon fisheries and quarries. Pop. about 6,500.

NAIRNSHIRE, a county of Scotland in the N. E. division, bounded by the Moray Firth and Inverness and Elgin counties. Its total area is 163 square miles, of which about 30,000 acres are under cultivation. In the south the land is chiefly mountainous, but there are important agricultural industries near the coast. The county has important cattle-breeding industries and there are also granite quarries and fisheries. The capital is Nairn. Pop. about 10,000.

NAIROBI, a city of British East Africa. The capital of the province of Ukamba. It is about 327 miles N. W. of Mombasa, with which it is connected by railroad. The town has grown rapidly in recent years and there are extensive railroad works, excellent hotels, stores, several important educational institutions and churches. The town is surrounded by attractive suburbs in which the European portion of the population live. Pop. (1920) about 35,000, including about 1,500 Europeans. The country is an important center for hunting parties for the big-game shooting for which the protectorate is famous.

NAMANGAN, a town of the former province of Russian Turkestan. Prior to the war it had important industries, including cotton ginning and the manufacturing of soap and leather. Pop. about 75,000.

NAMAQUALAND, GREAT, or **NAMALAND**, the S. extremity of the former province of German Southwest Africa.

NAMAQUALAND, LITTLE, a district of Cape province, S. of the lower Orange river; much copper is mined here.

NAM DINH, a city of French Indo-China. It is surrounded by fertile regions and is a well built city. It is the seat of a French Resident. It has important commercial interests and a large trade in rice, silk, cotton, and indigo. Pop. about 40,000.

NAMPA, a city of Idaho, in Canyon co. It is on the Oregon Short Line and the Idaho Traction railroads. It is the center of important mining interests. Agriculture has been promoted by irrigation projects. The public institutions include a State sanitarium and a public library. Pop. (1910) 4,205; (1920) 7,621.

NAMUR (nä-mür'), a city of Belgium, at the confluence of the Sambre with the Meuse, 35 miles S. E. of Brussels; is noted for its cutlery, and also manufactures firearms, leather, paper, and to-

bacco. With the exception of the picturesque citadel (1784), the old fortifications have been razed since 1866, their place being taken by a cordon of seven forts. The town itself has suffered so much by war that it offers little of interest — the cathedral, completed in 1772, with the grave of Don John of Austria; the Jesuit Church of St. Loup (1653), a large military school, an antiquarian museum, monuments of Leopold I. and the geologist Omalius d'Halloy (1783-1875), etc. Namur was captured by Louis XIV. in 1692, but recaptured in 1695, after a 10 weeks' siege, by William III. It was captured, after a brief resistance, by the Germans in 1914, and with its fall began the Great Retreat to the Marne. Pop. about 35,000.

NANAIMO, a city of British Columbia, the capital of the Nanaimo electoral district. It is situated on Departure Bay, on the east coast of Vancouver Island and on the Esquimault and Nanaimo railway, about 73 miles N. W. of Victoria. Opposite the mainland is Vancouver City, with which there is daily steamboat communication. The city is the center of the coal-mining and fishing industries of British Columbia. It has a handsome county building, a custom house and a Roman Catholic convent. It has manufactories of bricks, machine-shop products, and lumber products. The city was the site of the Hudson's Bay Company block house, built in 1833. Pop. about 10,000.

NANA SAHIB, the name under which Dundhu Panth, adopted son of the expeshwa of the Mahrattas, became known as the leader of the Indian Mutiny in 1857; born about 1825. He was the son of a Brahmin in the Deccan, and educated as a Hindu nobleman. He was industrious in fanning discontent with the English rule, on the outbreak of the mutiny he was proclaimed peshwa, and was responsible for the massacres at Cawnpur (see INDIA). After the suppression of the rebellion he escaped into Nepal. He died about 1860.

NANCHANG, a city of China, the capital of the province of Kiangsi. The surrounding country is very fertile and the city has important trade in porcelain and other manufactures. Pop. about 150,000.

NANCY (n*ong*-sē'), a town of France; capital of the department of Meurthe-et-Moselle, on the Meurthe, 220 miles E. of Paris. It comprises, besides several suburbs, the old and new towns, and contains many fine squares and imposing edifices. Here are statues of Stanislas Leszczynski (1677-1766), twice King of Poland, General Drouot, Thiers, and others, and among its noted institutions are the city hall, bishop's palace, theater, cathedral (1742), numerous churches, the 16th-century ducal palace, a university, etc. Nancy, which has grown much in importance since the German annexation of Alsace-Lorraine, has manufactures of cotton and woolen goods, artificial flowers, iron, tobacco, etc.; but its staple industry is embroidery on cambric and muslin. Dating from the 12th century, Nancy was the capital of the duchy of Lorraine. Here occurred the death of Charles the Bold (1477), and the birth of Callot and Claude Lorraine. Nancy was in the war zone in the World War, and suffered severely, chiefly from German aerial raids. Pop. about 120,000.

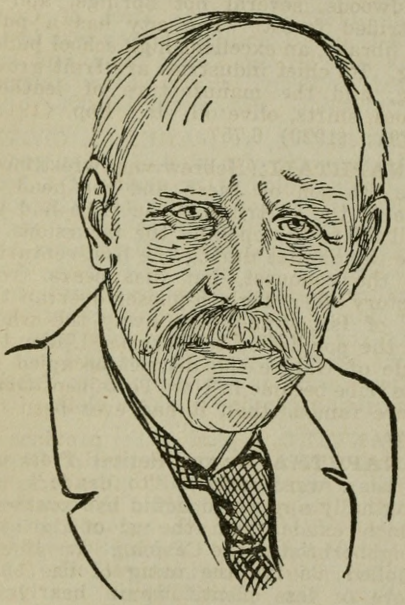
NANKEEN, or NANKING, CLOTH, a fabric made of a kind of cotton grown in China which is naturally of a buff-yellow color, and this is also the color of the cloth. The plant which yields it is a mere variety of *Gossypium herbaceum.* In the first half of the 19th century nankeen cloth was much used for ladies' and children's attire, and also for men's trousers, but now the name, when applied to certain kinds of cotton goods, is not confined to fabrics resembling genuine nankeen cloth.

NANKING, capital of the province of Kiangsu, formerly the capital of China, on the Yangtse river, 130 miles from its mouth. Its name signifies the southern capital. Since the removal of the seat of government to Peking (northern capital), in the beginning of the 15th century, the official name has been Kiangning, though the old name is popularly preferred. From 1853 to 1864 it was the capital of the Taiping rebels, who destroyed nearly all the magnificent public buildings for which the city was once famous. Previous to that time the walls inclosed an area nearly 20 miles in circumference, and reached in many places an elevation of 70 feet. The most memorable of the ruined buildings were the Porcelain Tower, the summer palace, and the tombs of the kings, with remarkable sepulchral statues. After its recapture by the Chinese imperialists, Nanking resumed its position as the seat of the viceregal government, and an arsenal was established. In 1842 it was captured by the British. Though specified in the treaty of Tientsin (1858) as a river port to be opened to foreign trade, little has come of this concession. Pop. estimated 270,000.

NANNING, a city of China in the province of Kwangsi. It is an important trading station and has a number of important educational and commercial establishments. Pop. about 37,000.

NANOSAURUS, or **NANOSAUR**, a fossil lizard-like animal belonging to the group Dinosauria, discovered in North America, and about the size of a cat.

NANSEN, FRIDTJOF, a Norwegian scientist and explorer; born in Great Fröen, near Christiania, Norway, Oct. 10, 1861. At the age of 19 he entered Christiania University, giving his attention there chiefly to biological in-



FRIDTJOF NANSEN

vestigations, in the pursuit of which, in 1882, he made a voyage in a sealer to the North Atlantic sealing grounds, and in 1888 crossed the continent of Greenland, returning in 1889. Following 1884, he matured a plan for a polar journey, a vessel (the "Fram") was built, designed especially for encountering the drift ice, and on June 24, 1893, with a crew of 11 men, he set sail from Christiania for the polar regions—the design being to reach the North Pole by letting the ship get frozen into the ice N. of Siberia and drift with a current setting toward Greenland. They reached the New Siberian Islands in September, and in 1895 were in lat. 84° 4′. There, accompanied by Johansen, Nansen left the "Fram" in charge of his other companions and pushed across the ice to Franz-Josef Land, where he wintered. Here, on June 17, 1896, he met the Jackson-Harmsworth Expedition, with which he returned to Vardö, having in his cruise penetrated to lat. 88°, circumnavigated the Nova Zembla, Franz-Josef, and Spitzbergen archipelagoes, and reached a point about 225 miles from the Pole. One week later the "Fram" reached Vardö. He was appointed Professor of Zoölogy in the University of Christiania. In 1919 he visited Russia for the Allied Council and prepared a report on conditions there. He wrote: "Across Greenland"; "Esquimaux Life"; "Farthest North" (1897); "Through Siberia, the Land of the Future" (1914).

NANTES (n*ongt*), the 7th largest city of France, capital of the department of Loire-Inférieure, on the right bank of the tidal Loire (here 2,000 yards wide, and joined by the navigable Erdre and Sèvre-Nantaise), 35 miles from the sea, and 248 S. W. of Paris. The natural beauties of the site have been much improved by art, and, the old town having been demolished 1865-1870, Nantes is one of the handsomest cities in France, with its noble river, quays, bridges, shady boulevards, squares, and statues. The unfinished cathedral (1434-1852) contains Colomb's splendid monument (1507) to the last Duke and Duchess of Brittany, and another (1879) to General Lamoricière. The ducal castle, founded in 938, and rebuilt in 1466, was the occasional residence of Charles VIII. and most of his successors, the prison of Cardinal de Retz and Fouquet, and the place where on April 15, 1598, Henry IV. signed the famous Edict of Nantes. Other notable buildings are the splendid Church of St. Nicholas (1854), the court house (1853), the theater (1787), and the new post-office (1884), besides a museum, a picture gallery, and a library of 50,000 volumes. The harbor has been extensively improved in recent years. The chief industries are sugar making, shipbuilding, and manufactories of copper and iron. The chief exports are hardware, cereals, and preserved provisions; the chief imports sugar, iron, cocoa, and wines. The Portus Nannetum of the Romans, and the former capital of Brittany—a rank it disputed with Rennes—Nantes has witnessed the marriage of Anne of Brittany to Louis XII. (1499), the embarkation of the Young Pretender (1745), the fall of the Vendéan leader Cathélineau (1793), and the arrest of the Duchess of Berri (1832). Fouché was a native. Pop. about 175,000.

NANTES, EDICT OF. See EDICT OF NANTES.

NANTICOKE, a borough in Luzerne co., Pa.; on the Susquehanna river, and on the Lackawanna, the Central of New Jersey and the Pennsylvania railroads; 8 miles S. W. of Wilkes-Barre. It has daily and weekly newspapers, silk mills, canning factory, and several coal mines. Pop. (1910) 18,877; (1920) 22,614.

NANTUCKET, an island, county, town, and county-seat of Massachusetts; off the coast of Cape Cod, 30 miles from the mainland. The island is about 15 miles long by 3 to 4 miles wide; is triangular in shape; and with several small adjacent islands has an area of about 60 square miles. The most populous part of the town is on the N. shore of the island, about 56 miles E. of New Bedford. It contains the Nantucket Athenæum Library, a high school, Coffin's Manual Training School, waterworks, National and savings banks, gas and electric lights, and weekly newspapers. In summer a daily line of steamboats connects the island with New Bedford, Martha's Vineyard, and Wood's Hole. The equable climate and dry soil of the island make it very healthful, and a favorite summer resort. Pop. (1910) 2,962; (1920) 2,797.

NANTWICH, a market-town of Cheshire, England, on the Weaver, 4 miles S. W. of Crewe. It has some quaint old timber houses; a fine cruciform parish church, with a central octagonal tower, 110 feet high; a Gothic town hall (1858); a market hall (1867); a grammar school (1611); and brine baths (1883). Boot and shoe making and the manufacture of clothing, cotton goods and iron ware are the principal industries. A great fire (1583), and its siege by the royalists under Lord Byron (1644) are the chief events in the history of Nantwich. Pop. about 3,000.

NAON, ROMULO S., Argentine Ambassador to the United States. Born in Buenos Aires 1875; graduated from the University of Buenos Aires and later was a member of the faculty of that institution. In 1902 he was elected a representative to the Congress of Argentina and in 1908 accepted the post of Minister of Justice and Public Instruction. In 1911 he was sent as envoy to the United States, and when the legation became an embassy in 1914 he was the first ambassador. In 1914, when the difficulties between Mexico and the United States seemed likely to produce war between the two countries, Naon along with the Brazilian and Chilean ambassadors offered their mediation which was accepted and the Niagara Falls Conference resulted. The Congress of the United States passed a vote of thanks to Naon for his services as mediator. He has been prominent in the work of the Pan-American Union and is the author of works on political science and constitutional law.

NAPA, a city of California, the county-seat of the county of the same name. It is situated on the Napa river and on the Southern Pacific railroad, about 46 miles N. E. of San Francisco. It is the site of the State Hospital for the Insane and in the vicinity are the Napa Redwoods, several hot springs, and a petrified forest. The city has a public library, an excellent high school building. Its chief industries are fruit growing, and the manufacture of leather, shoes, shirts, olive oil, etc. Pop. (1910) 5,791; (1920) 6,757.

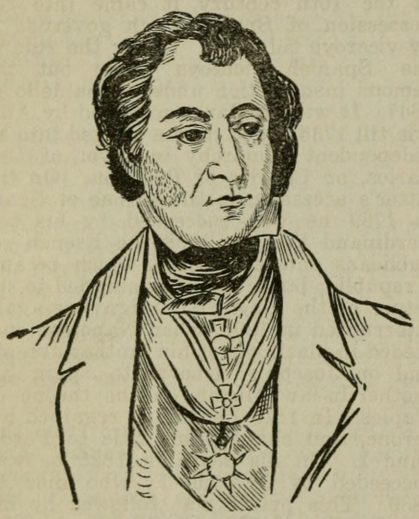
NAPHTALI (Hebrew=my wrestling), the 6th son of Jacob and the head of one of the 12 tribes. The tribe had its full share in repelling the incursions of the Canaanites during the first centuries of the conquest, but disappears from history when Tiglath-pileser overran the N. of Israel and bore away the whole of the population to Assyria. Under the title of Galilee the district occupied by the tribe became in New Testament times more famous than it had ever been before.

NAPHTHA, a word derived from the Persian word *nafata,* "to exude," and originally applied to liquid hydrocarbons which exude from the ground in the neighborhood of the Caspian Sea. It was applied also to the natural oils found more or less plentifully in nearly all countries of the world, and to the oil distilled from Boghead mineral in Scotland. But the inconvenience and danger of classing all these oils indiscriminately as naphthas became apparent after the Scotch paraffin and the American petroleum refined oils began to be used for domestic illumination. The word naphtha is properly applied to the lighter oils which pass off first in the distillation of petroleum, with gravity ranging from 90 to 62° Beaumé.

NAPHTHALENE, in chemistry, $C_{10}H_8$= $C_{10}H_7H$, naphthalin, or naphthaline. A frequent product of the dry distillation of organic substances, occurring to a considerable extent in that portion of coal-tar distilling between 180° and 220°, from which it crystallizes on cooling. It forms colorless shining, leafy crystals of peculiar odor and burning

taste; melts at 79° to a liquid as clear as water; boils at 216°-220°, and burns, when inflamed, with a highly luminous but smoky flame.

NAPIER, SIR CHARLES, an English naval officer; born near Falkirk, Scotland, March 6, 1786. He entered the navy as midshipman in 1799, was promoted lieutenant in 1805, and sent to the West Indies, where he served in the operations against the French. He was promoted commander by Admiral Cochrane in August, 1809, and in 1811 was employed in Portugal and along the coast of S. Italy. In 1833 he accepted the command of the Portuguese constitutional fleet, and effected the establish-



SIR CHARLES NAPIER

ment of Donna Maria on the throne. Returning to England, he was appointed in 1839 to the command of the "Powerful." and performed some of his most gallant exploits, including the storming of Sidon and the capture of Acre. Having blockaded Alexandria, he concluded on his own responsibility a convention with Mehemet Ali. On his return to England he was created K. C. B. In 1841 he was elected member for Marylebone. In 1847 he received the command of the Channel fleet as rear-admiral: and in 1854, on the commencement of the Russian war, he was nominated to the command of the Baltic fleet, being now a rear-admiral. In this capacity he accomplished little beyond the capture of Bomarsund. He sat in Parliament as member for Southwark from 1855 till his death. He died Nov. 6, 1860.

NAPIER, SIR CHARLES JAMES, a British military officer; born in London, England, Aug. 10, 1782. He entered the army in 1794, and served in Ireland and Portugal, being present at Corunna, where he was wounded and taken prisoner in 1809. In 1811, when again at liberty, he returned to the Peninsula, and served through the war, being severely wounded in several battles. In 1812 he was made lieutenant-colonel, and in the following year served in the expedition to the Chesapeake. In 1837 he was made Major-General; in 1838 K. C. B. In 1841 he was appointed to the chief command in the presidency of Bombay, with the rank of Major-General, and was shortly afterward called to Scinde. Here he gained the splendid victories of Meanee and Haidarabad, and was afterward made governor of Scinde, which he administered till 1847. In 1849 his services were again required, and he sailed once more for the East, as Commander-in-Chief of all the forces in India. Before he arrived Lord Gough had brought the Sikh war to a triumphant termination, and no special work remained for Sir Charles Napier to perform. Having returned to England, he died in Portsmouth, Aug. 29, 1853.

NAPIER, ROBERT, LORD, an English military officer; born in Ceylon, Dec. 6, 1810. He entered the Indian army in 1826, and served with distinction in the campaigns of the Sutlej and the Punjab. In 1854, he was appointed Chief Engineer of Bengal, and planned the operations at the Siege of Lucknow in 1857. He also served with high credit as second in command in the war with China, receiving general rank, the Grand Cross of the Bath, and a military membership of the Indian Council therefor. In 1865, Sir Robert was made Commander-in-Chief of the British army sent out to Abyssinia for the rescue of the English captives, held there by its semi-barbarous ruler, King Theodore. After successfully accomplishing his mission, Sir Robert was raised to the peerage as Lord Napier, of Magdala, and also made a Knight Grand Cross of the Star of India. In 1869 he was appointed Commander-in-Chief of the British Indian army; and governor of Gibraltar in 1876. He died in London, England, Jan. 14, 1890.

NAPLES (Italian, Napoli), a city in southern Italy, the largest in the kingdom, on the N. shore of the Bay of Naples, about 160 miles from Rome. Its site is magnificent, being on the side of a nearly semi-circular bay, partly along the shore, and partly climbing the ad-

jacent slopes, bounded on one side by the picturesque heights of Posilipo, and on the other by the lofty mass of Vesuvius, while the background is rich in natural beauty. The environs are densely peopled, towns and villages being numerous round the bay as well as inland. The city is divided into two unequal parts by a steep bridge proceeding from the height on which stands the castle of St. Elmo, and terminated by a rocky islet surmounted by the Castello dell' Ovo. The largest and most ancient part of Naples lies to the S. E. of these heights. This now forms the business quarter, and is intersected from N. to S. by the main street, the Toledo, now Via di Roma. The W. and more modern part of the city is the fashionable quarter, has a superior situation, and commands magnificent views.

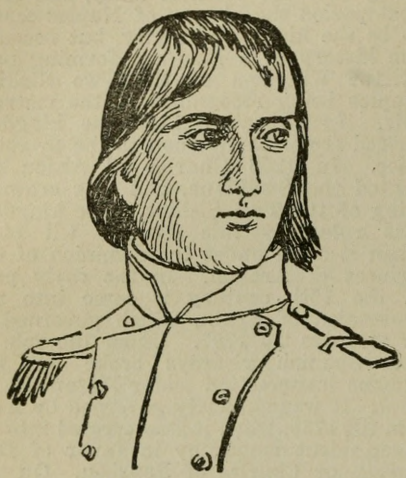
There are few remains of ancient times, but there are five castles, S. Dell' Ovo, Nuovo, Del Carmine, Capuano, Elmo, and the Gates Porta del Carmine and Capuano, all of medieval construction. Among the more remarkable public edifices is the cathedral, dating from 1282, a large Gothic building erected on the site of the two temples dedicated to Neptune and Apollo. It is held in high veneration in consequence of possessing the relics of St. Januarius or Gennaro. The university (1224) in 1916-1917 had 6,346 students and there are many other educational institutions, and numerous hospitals and charitable foundations. The manufactures, which are numerous, include macaroni, woolens and cottons, silks known as *gros* de Naples, glass, china, musical instruments, flowers and ornaments, perfumery, soap, chemicals, machinery, ships, locomotives, boilers, etc. The harbor accommodation has recently been extended, and the trade is important. The exports consist chiefly of wine and brandy, fruits, paper, and hemp. Naples is one of the most densely populated cities of Europe and one of the most peculiar features of the city is its unique population and the universal publicity in which life is passed. In the environs are situated the tomb of Vergil, the ancient ruined cities of Herculaneum and Pompeii, the remains of Roman temples, villas, palaces, and tombs, together with the physical phenomena of Vesuvius. Pop. about 700,000.

History.—Naples was founded by a Greek colony from the town of Cumæ many centuries before Christ. It took the name of Neapolis ("New City") to distinguish it from a still older Greek city adjoining called Parthenope. It passed to the Romans in 290 B. C. In A. D. 536 it was taken by Belisarius, and was pillaged by Totila in 542. In 1130 the Norman Robert Guiscard united the S. of Italy, and the adjacent island of Sicily into one political unity, and from that period the history of Naples ceases to be the history of a city, but becomes the history of a kingdom forming part of the Kingdom of the Two Sicilies, Naples being recognized as the metropolis. In the year 1189 the kingdom passed from the Norman to the Swabian race. In 1266 Charles of Anjou defeated the Swabians, and was crowned King of the Two Sicilies. The kingdom was ruled by this dynasty till 1441, when it came under the dominion of the Princes of Aragon. In the early part of the 16th century it came into the possession of Spain, which governed it by viceroys till 1707. Under the rule of the Spanish viceroys broke out the famous insurrection under Masaniello in 1647. It was similarly governed by Austria till 1735, when it was erected into an independent monarchy in favor of Don Carlos, or Charles of Bourbon. On the latter's accession to the throne of Spain in 1759 he was succeeded by his son Ferdinand IV. In 1798 the French republicans entered Naples, which became a republic; but a loyalist rising led to the return of the king. His reign was again interrupted in 1806, when Napoleon succeeded in placing first his brother Joseph, and on Joseph's removal to Spain his brother-in-law Murat, on the throne of Naples. In 1815 Ferdinand regained his throne, and changed his title to Ferdinand I. On his death in 1825 he was succeeded by Francis I., who died in 1830. This prince was followed by his son Ferdinand II., notorious under the nickname of Bomba. He died in 1859, and his son Francis II. was his successor. The latter continued the abuses of the old régime, and in the revolution that broke out in 1860 under the guidance of Garibaldi he was deposed and Naples and Sicily were added to the Kingdom of Italy.

NAPLES, BAY OF (the ancient Crater Sinus), an arm of the Mediterranean, on the W. coast of Italy, extending for about 35 miles from the Capo di Miseno, its N. W. boundary, to the Punta della Campanella, its S. E. limit. It is separated from the open sea by the islands of Procida, Ischia, and Capri. Its shores have for ages been the scene of powerful volcanic agency and the scenery has long been celebrated for its beauty and grandeur. Mount Vesuvius is the most striking and distinctive feature.

NAPO, a river of South America, a tributary of the upper Amazon, rising

on the slope of Mount Cotopaxi in Ecuador and flows S. E., emptying into the Amazon river, about 50 miles below Iquitos. Its total length is about 750

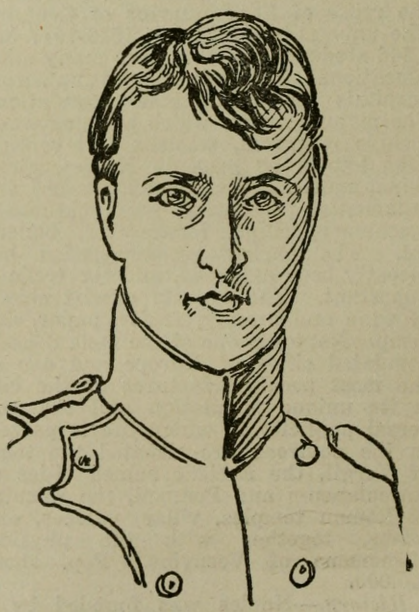


NAPOLEON AS A YOUNG OFFICER

miles. It is navigable for nearly 400 miles and flows through a region rich in gold, rubber, and other products, which has been little exploited.

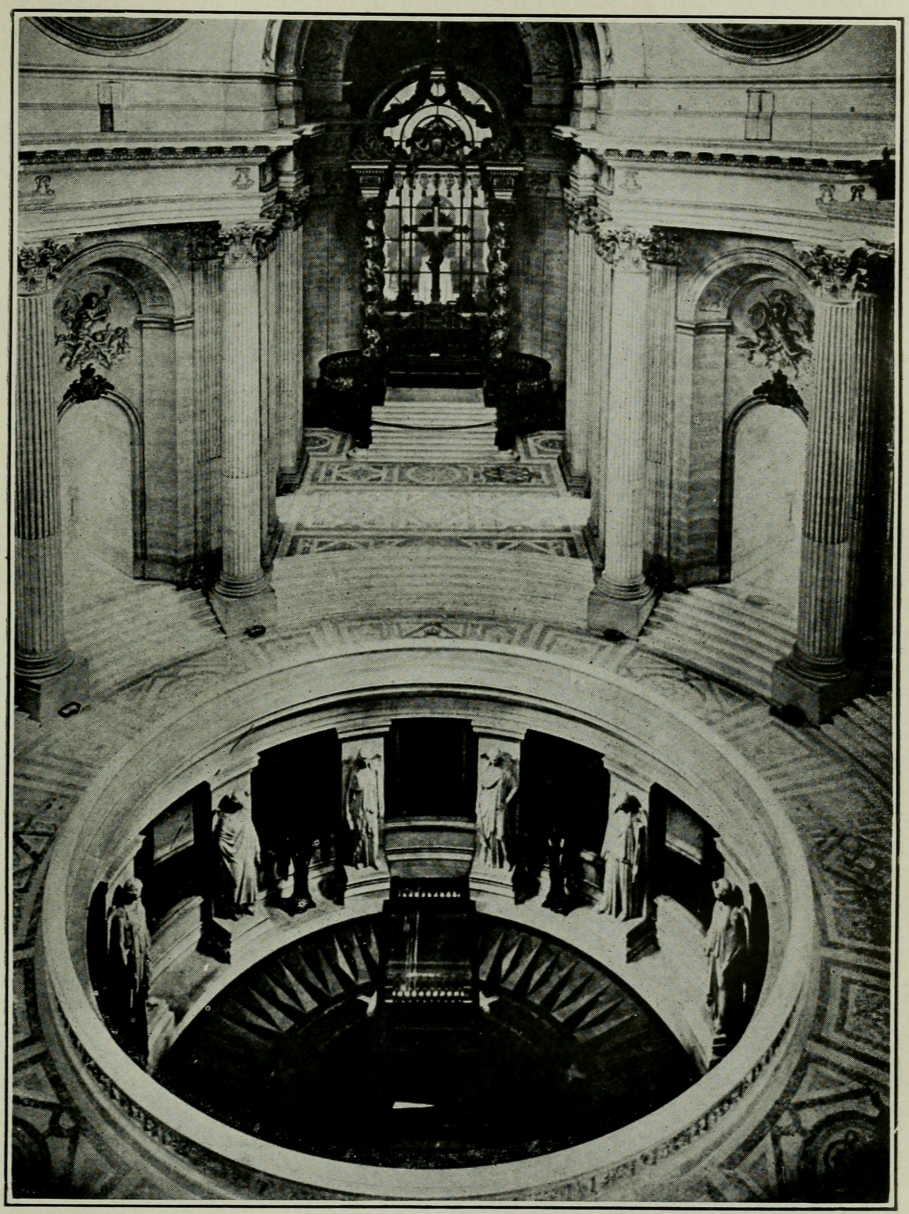
NAPOLEON I. (NAPOLEON BONAPARTE), called THE GREAT, EMPEROR of the French; born in Ajaccio, Corsica, Aug. 15, 1769. He was the son of Charles Bonaparte, a noble Corsican of little fortune and his wife, Letizia Ramolino, a woman of great beauty, courage, and ability. Having early evinced a decided taste for military life, he was, at the age of 11, sent to the military school of Brienne, in Champagne, France, and in 1784, to the military school of Paris. In 1785 he was nominated sub-lieutenant of artillery, and sent on duty in his native country. In 1792 he was driven out of the island by Paoli, the ally of the English, and retired to Marseilles, where he lived in poverty with his mother and sisters. He was made a captain in 1793, and soon after he was employed to subdue Marseilles, a mission in which he was successful. The same year he was sent to join the besieging army before Toulon, with the rank of lieutenant-colonel. For his services at Toulon, Napoleon was appointed Brigadier-General of artillery, with the chief artillery command in the S. of France; but having been suspected on acount of a mission to Genoa, his name was erased from the active-service list. He was ere long, however, called to active and important duties in his own country. When the directors were reduced to extremities by the insurrection of the sections, in October, 1795, they gave him the command of their forces, which were only 5,000, shut up in the quarters of the Carousel and Louvre. Napoleon immediately adopted his plan of action, and planted cannon in all the streets round the assembly; and when the National Guard, to the number of 30,000, approached to drive out and arrest the Convention, he played on their ranks with grape-shot with such effect that, after a vain struggle of many hours, the National Guards broke and fled, and were ultimately during the night surrounded in their different retreats, attacked, disarmed, and sent to their homes. For this important service, the Convention appointed him second in command of the army of the interior, and subsequently, by the retirement of Barras, to the post of General of the Interior.

Soon after Napoleon married Josephine Beauharnais he was, in February, 1796, given the command of the army of Italy, which for the last four years had lain inoperative at the base of the Alps between Savoy and the sea. A few



NAPOLEON AS FIRST CONSUL

days after his marriage he set out for his command. He found the troops in a most miserable condition. Descending like a torrent from the summit of the



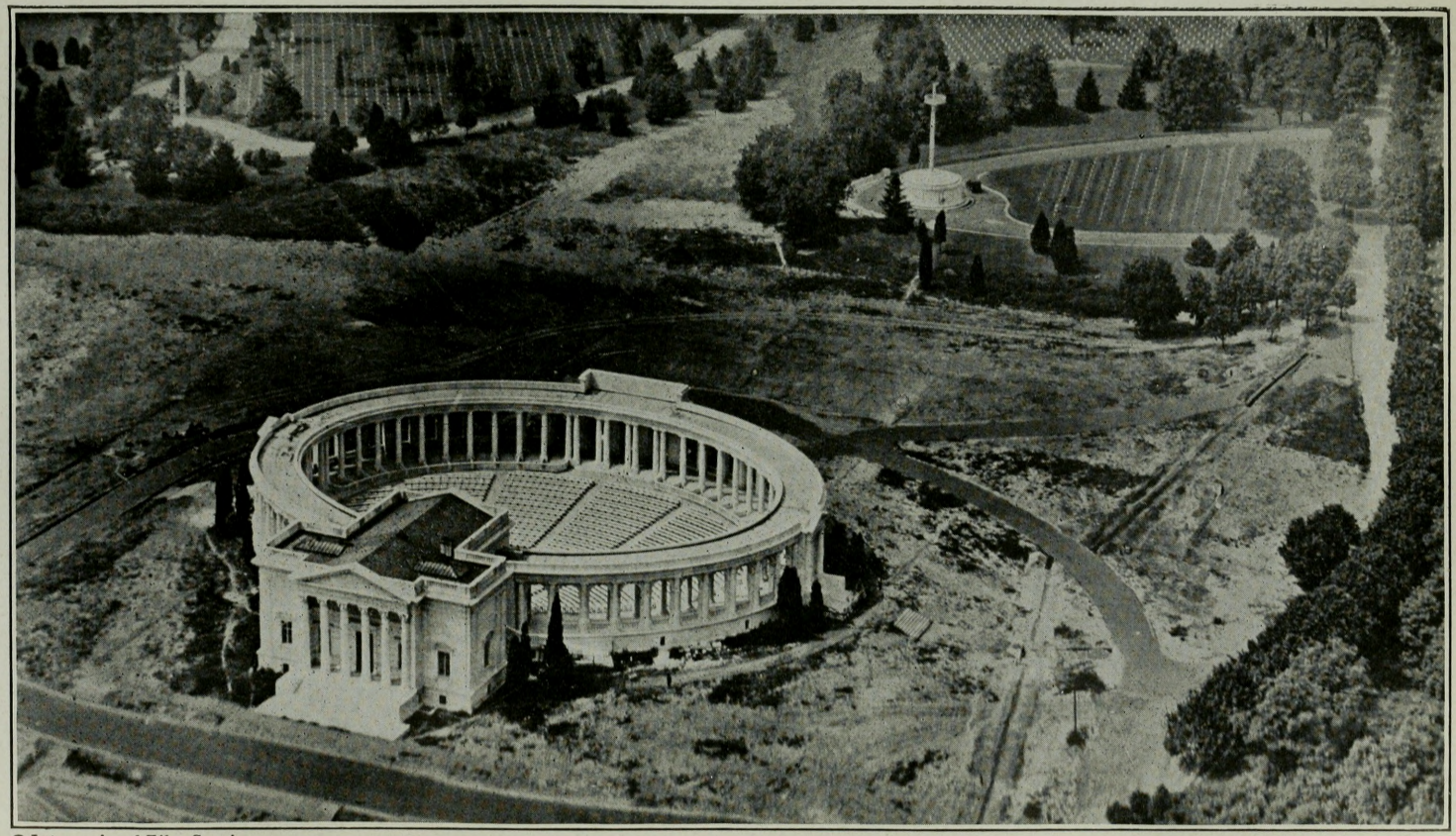
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THE TOMB OF NAPOLEON, SHOWING ALSO THE ALTAR IN THE BACKGROUND

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THE CITY AND BAY OF NAPLES, WITH VESUVIUS IN THE DISTANCE



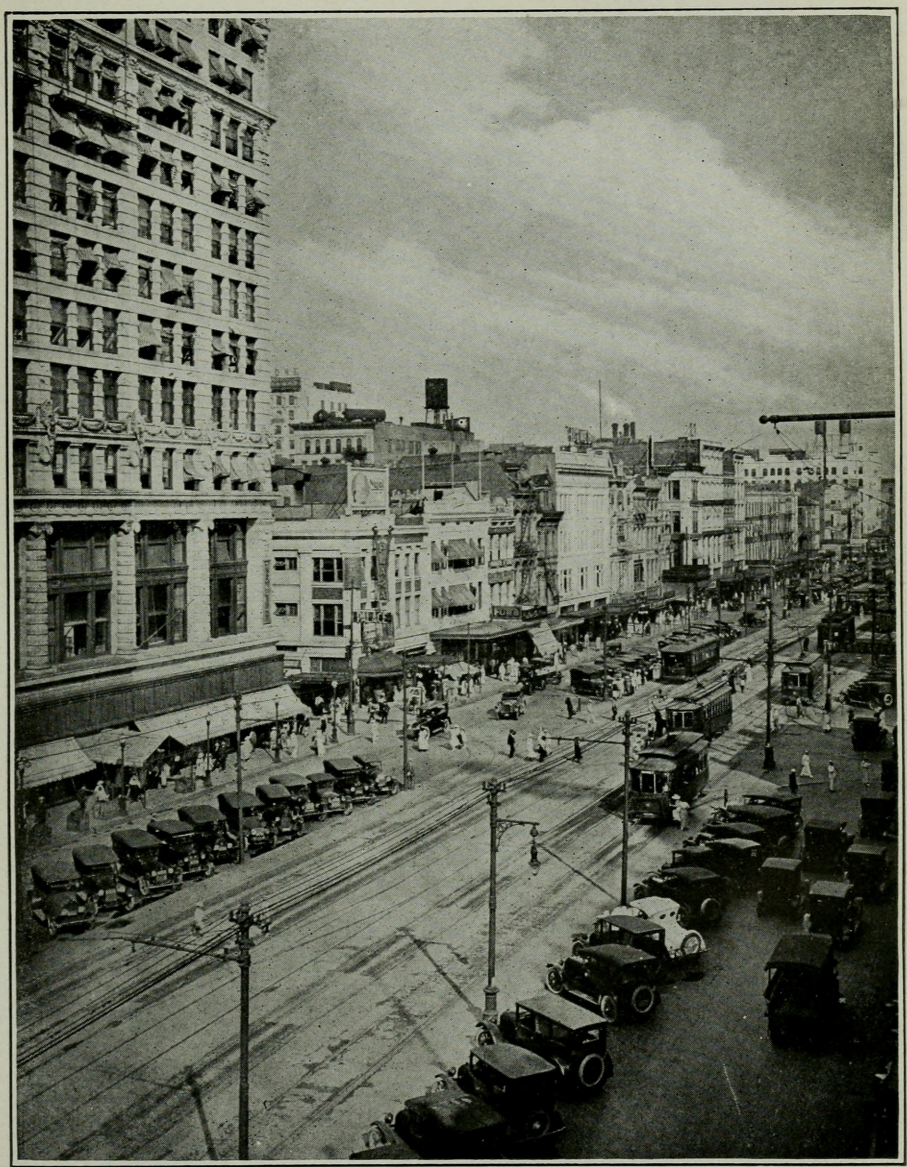
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THE NATIONAL CEMETERY AT ARLINGTON, VIRGINIA, SHOWING THE MEMORIAL AMPHITHEATER



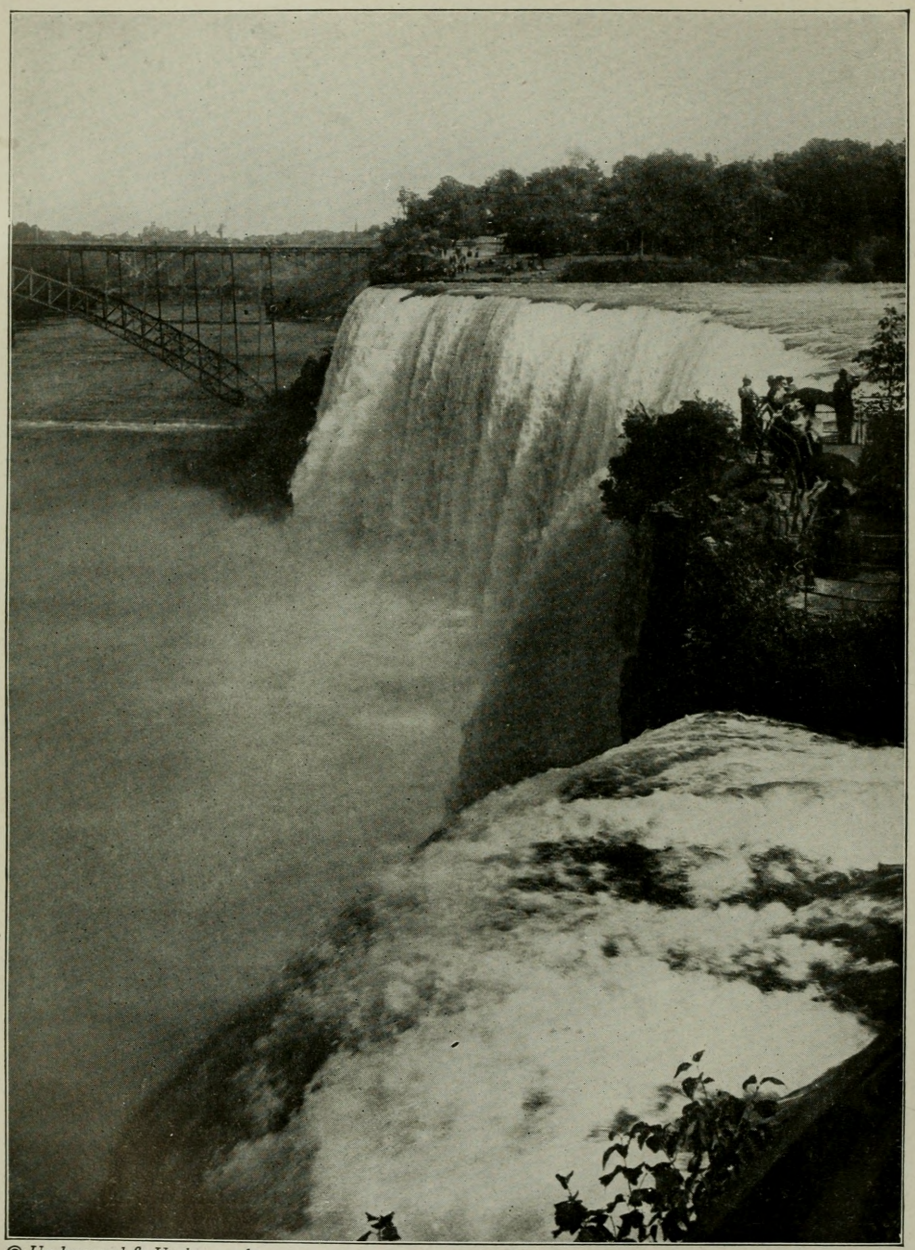
Photo, Ewing Galloway

WEST STREET, CITY OF NEW YORK, SAID TO BE THE BUSIEST WATER-FRONT STREET IN THE WORLD



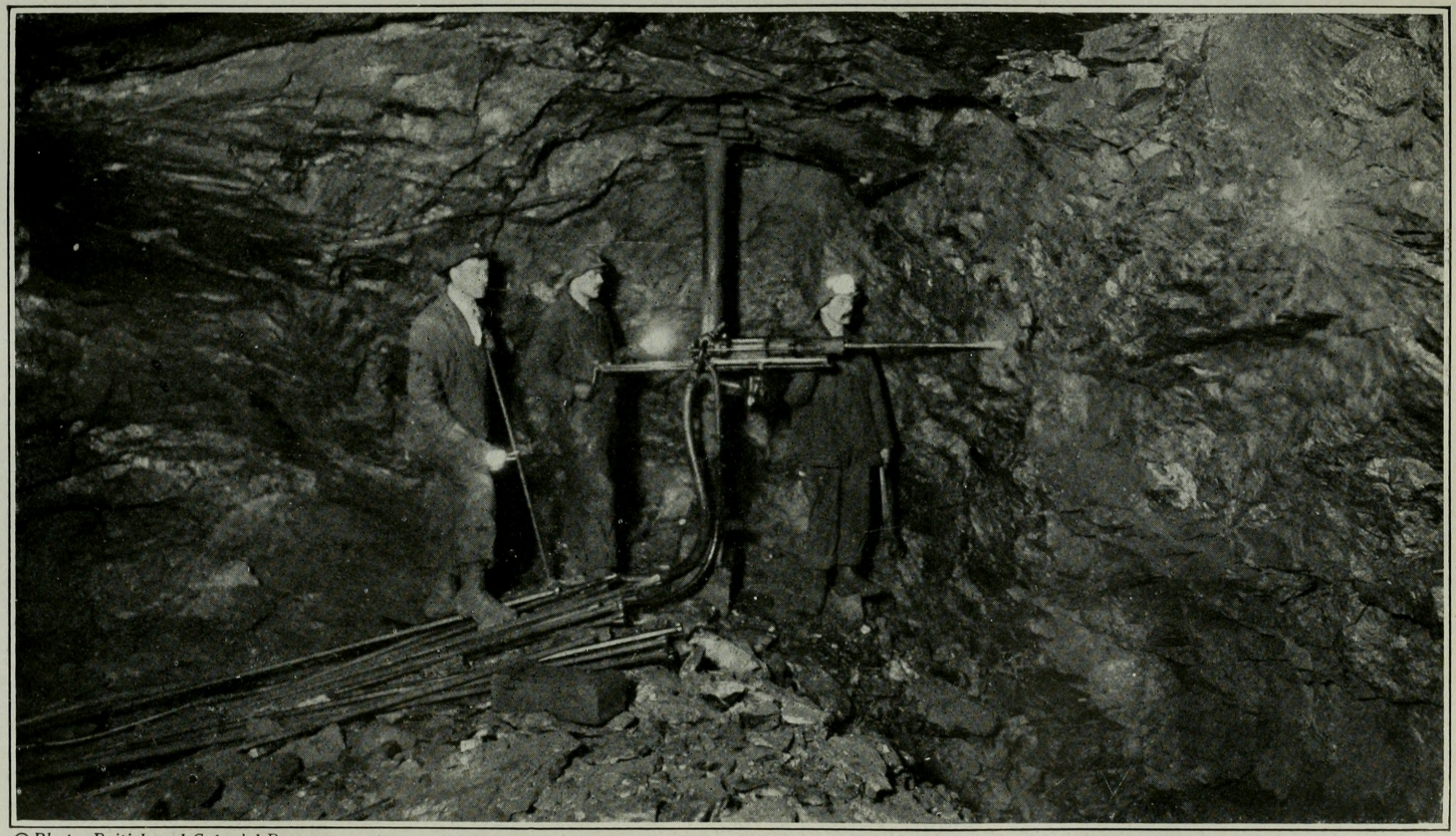
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CANAL STREET, NEW ORLEANS, LA.



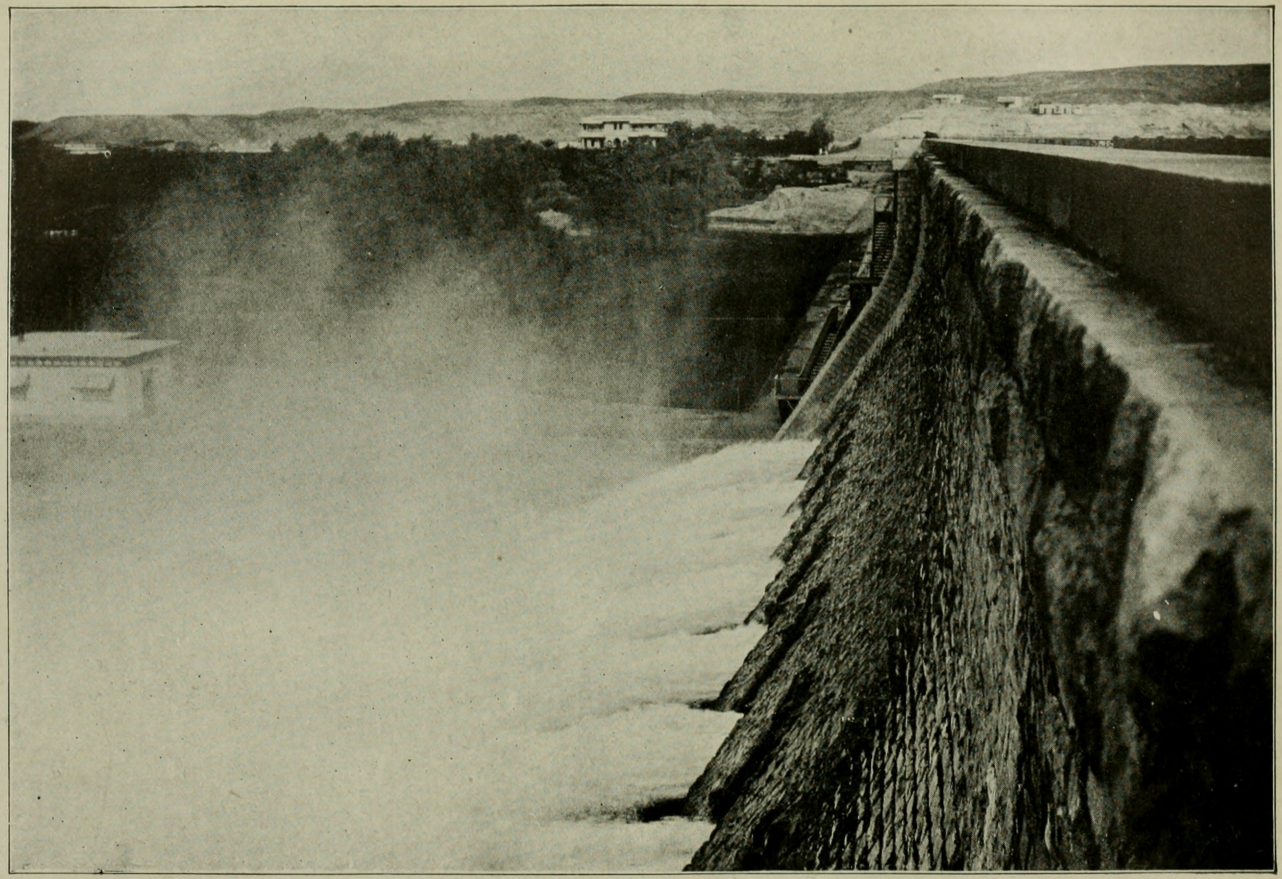
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NIAGARA FALLS AND THE SUSPENSION BRIDGE OVER NIAGARA RIVER



©*Photo, British and Colonial Press*

DRILLING TO BREAK DOWN NICKEL ORE IN A CANADIAN MINE



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THE SLUICES OF THE ASSOUAN DAM ON THE UPPER NILE

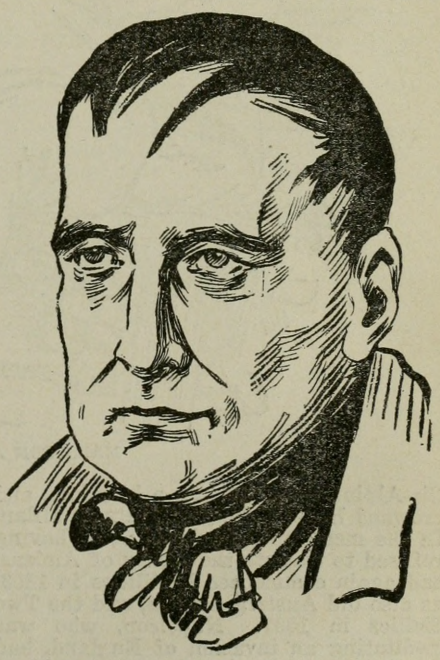
Alps, he soon carried everything before him. In a year and a half, the "Little Corporal," as he came to be called by



NAPOLEON I. AS EMPEROR

his admiring soldiery, had either routed or destroyed five armies, each stronger than his own—that of the Piedmontese, at Mondovi, that of Beaulieu, at Cairo, Montenotte, Millesimo, Dego, and the bridge of Lodi, that of Würmser, at Castiglione, Roverdo, and Bassano; that of Alvinzi, at Arcole, Rivoli, and Mantua; and that of Prince Charles, whom he pursued into Germany as far as Leoben, on the road to Vienna. The result of this unexampled career of victory was the treaty of Campo-Formio, which secured to France a vast accession of territory. The young general was now the most popular man in France, and the Directory, eager to get rid of their dangerous rival, accepted a proposal made by him for the invasion of Egypt, and appointed him commander-in-chief of a finely equipped expedition which sailed for the East in 1798. He took Alexandria, gained over Mourad Bey the battle of the Pyramids, and, though the fleet had been destroyed by Nelson at Aboukir, the French were soon masters of Egypt. Wishing then to join Syria to his conquests Napoleon crossed the desert which separates Asia and Africa, stormed Jaffa, and laid siege to Acre; but after a siege of 57 days, the murmurings of his army, decimated with hunger and pestilence compelled him to raise the siege. He retreated to Egypt after having, with 2,000 men, defeated 20,000 Ottomans with great slaughter, at Mount Tabor. Napoleon next engaged 20,000 Janissaries, whom the English landed in the bay of Aboukir, and nearly annihilated them. The political condition in France impelled him to return there. After narrowly missing capture by the English cruisers he appeared unexpectedly at Paris at the end of the year 1799.

Bonaparte at once became the head of a very powerful party, and, aided by Sieyès, his brother Lucien and General Leclerc, he overthrew the Directory on the famous 18th Brumaire, year 8, of the Republic (Nov. 9, 1799), caused himself to be named First Consul, having for his colleagues Cambacérès, and Lebrun, each also dignified by the title of consul, but mere tools to his ambition. In 1800 he placed himself at the head of the army of Italy, crossed the Alps, and gained the battle of Marengo. General Moreau having about the same time beaten the Austrians at Hohenlinden, the peace of Luneville was signed with Austria in 1801, and in the following year the treaty of Amiens with England concluded the second war of the French



NAPOLEON I. IN 1813

Revolution. In the same year he was proclaimed consul for life. The peace, however, proved only an armed truce. Both parties were only gaining breath

for a renewal of the fight. Napoleon did great things during its continuance. He reformed the whole civil administration of the country, pacified Vendée, recalled the *émigrés*, reopened the churches, concluded a new Concordat with the Pope, created the Order of the "Legion of Honor," instituted the Bank of France, and urged the Code Napoleon to an end. In 1804 he became Emperor of the French. Six months later he erected the latter, 80,000 strong, had advanced to Ulm, in Württemberg. Crossing France and the S. of Germany with incredible rapidity, Napoleon defeated the Austrians in several actions, and at length shut up 30,000 in Ulm, where they were forced to capitulate the very day before the battle of Trafalgar. Advancing then at the head of 180,000 men down the valley of the Danube, he captured Vienna and totally defeated the combined Aus-



NAPOLEON AT ST. HELENA

Cis-Alpine Republic into a kingdom, and crowned himself King of Italy at Milan. In the meantime, England, after having refused to execute the treaty of Amiens, had again commenced hostilities in 1803, as also did Austria, Russia, and the Two Sicilies in 1807. Napoleon, who was meditating an invasion of England, had the mortification of seeing the combined fleets of France and Spain destroyed by Nelson at Trafalgar; but on the continent of Europe he compensated this loss by a succession of triumphs. Russia had joined Austria, and the army of the trian and Russian armies, under the Emperor Alexander in person, on Dec. 2. This catastrophe drove Austria to a separate peace. In the next year Napoleon defeated the Prussians at Jena and Auerstädt. Prussia was speedily overrun, Berlin taken, and the remnant of their armies driven back to the Vistula, where they were supported by the Russians, who now came up in great strength. The victories of Eylau (Feb. 8, 1807), and Friedland (July 14) led to the treaty of Tilsit, which, virtually destroying all lesser powers, in effect

divided the whole continent of Europe between Napoleon and Alexander. Napoleon now seized on Portugal without a good pretext, and decoyed the king, queen and heir-apparent of Spain to Bayonne where he succeeded in extracting from them all a renunciation to the throne of Spain, on which he immediately placed his brother Joseph, and at the same time gave the throne of Naples to his brother-in-law, Murat. But Spain resisted the French invaders, and the defeat and capitulation of Dupont at Baylen, and Junot at Cintra, were the commencement of the declining fortunes of the emperor.

Meanwhile, Josephine, having given no heir to the empire, was divorced by Napoleon in 1809, and Maria Louisa, daughter of his old enemy the Emperor of Austria, became Empress of the French. The fruit of this union was a son, who, at his birth, was styled King of Rome. Having drained France of her treasure, Napoleon next conceived a formidable invasion of Russia. In 1812 he assembled the largest army that was ever led by a European general, and, at the head of 500,000 men passed into Russia, whose army he defeated in several engagements. In September he entered Moscow, which had been previously evacuated, and almost totally consumed. After spending a month there, in expectation of overtures of peace from St. Petersburg, the frost and snow of a Russian winter compelled him to commence a precipitate retreat. Harassed by innumerable foes, the French army, deprived of everything, perished in the snow, or found a grave in the icy waters of the Beresina. Hastily returning to France, the emperor succeeded in creating another army, and opened the campaign in Germany with the victories of Lützen, Bautzen, and Dresden; but Russia, Prussia, Austria, and Sweden were now in arms against him; and at Leipsic, where, in three days, the French lost upward of 50,000 men, his power received a death-stroke. The allies entered France, and Napoleon, finding his army disorganized and most of his ministers and generals disaffected toward him, abdicated the throne of France, at Fontainebleau, April 4, 1814. The Bourbons were re-established in France, Napoleon accepting the island of Elba for his retreat. In less than a year he again appeared in France, and, by the time he had reached the capital, the whole army had declared for him. Immediately the coalition that had dethroned him was renewed, but Napoleon at the head of his brave and enthusiastic troops, took the initiative, and defeated the Prussians at Ligny, June 16; but. betrayed by Bourmont, and deprived by a fatal misunderstanding, of the division and artillery under Grouchy. he was beaten by Wellington and Blücher at Waterloo, June 18. This defeat was decisive. Napoleon returned to Paris, and abdicated in favor of his son, June 22, 1815, 100 days after his landing from Elba. Napoleon went then to Rochefort, and embarked voluntarily on the English vessel the "Bellerophon." He was declared a prisoner by the British and was taken to St. Helena, where he remained until his death, on May 5, 1821.

NAPOLEON II. (NAPOLEON FRANCOIS BONAPARTE), titular Emperor of France, son of the Emperor Napoleon I. and of Maria Louisa of Austria; born in Paris, France, March 20, 1811. From his birth he was styled "King of Rome." After his father's first abdication in 1814 he went with his mother to Vienna, where he was brought up at the court of his grandfather, the Emperor Francis, who created him Duke of Reichstadt. He died, July 22, 1832, in the palace of Schönbrunn.

NAPOLEON III. (CHARLES LOUIS NAPOLEON BONAPARTE), Emperor of the French; born in Paris, France, April 20, 1808. He was the youngest son of Louis Bonaparte, brother of Napoleon I. and King of Holland, and of Hortense de Beauharnais. His early life was spent chiefly in Switzerland and Germany. By the death of his cousin the Duke of Reichstadt (Napoleon II., see above) he became the recognized head of the Bonaparte family. In 1836 an attempt was made to secure the garrison of Strassburg, but the affair turned out a ludicrous failure. The prince was taken prisoner and conveyed to Paris, and the government of Louis Philippe shipped him off to the United States. The death of his mother brought him back to Europe, and for some years he was a resident of England. In 1840 he made a foolish and theatrical descent on Boulogne; was captured, tried and sentenced to perpetual confinement in the fortress of Ham. After remaining six years in prison he escaped and returned to England. On the outbreak of the revolution of 1848 he hastened to Paris, and securing a seat in the National Assembly, he at once commenced his candidature for the presidency. On the day of the election, it was found that out of 7,500,000 votes Louis Napoleon had obtained 5,434,226; On Dec. 20, the prince-president, as he was now called, took the oath of allegiance to the republic. On the eve-

ning of Dec. 2, 1851, the president declared Paris in a state of siege, a decree was issued dissolving the assembly, 180 of the members were placed under arrest, and the people who exhibited any disposition to take their part were shot down in the streets by the soldiers. Another decree was published at the same time ordering the re-establishment of universal suffrage, and the election of a president for 10 years. Napoleon was elected by an overwhelming majority.

As soon as Louis Napoleon found himself firmly seated he began to prepare for the restoration of the empire. In January, 1852, the National Guard was revived, a new constitution adopted, and new orders of nobility issued; and at last, on Dec. 1, Louis Napoleon Bonaparte was proclaimed emperor under the title of Napoleon III.

On Jan. 29, 1853, the new sovereign married Eugénie Marie de Montijo, Countess de Teba. In March, 1854, Napoleon III., in conjunction with England, declared war in the interest of Turkey against Russia (see CRIMEAN WAR). In April, 1859, war was declared between Austria and Sardinia, and Napoleon took up arms in favor of his Italian ally, Victor Emanuel. The allies defeated the Austrians at Montebello, Magenta, Marignano, and Solferino. In 1861 France, England, and Spain agreed to dispatch a joint expedition to Mexico for the purpose of exacting redress of injuries, but the English and Spaniards soon withdrew. The French continued the quarrel, and an imperial form of government was initiated, Maximilian, Archduke of Austria, being placed at its head with the title of emperor. Napoleon, however, withdrew his army in 1867, and the unfortunate Maximilian, left to himself, was captured and shot. On the conclusion of the Austro-Prussian war of 1866, Napoleon, jealous of the growing power of Prussia, demanded a reconstruction of frontier, which was peremptorily refused. The ill-feeling between the two nations was increased by various causes, and in 1870, on the Spanish crown being offered to Leopold of Hohenzollern, Napoleon demanded that the King of Prussia should compel that prince to refuse it. Notwithstanding the subsequent renunciation of the crown by Leopold, war was declared by France, July 19. The war was a decisive one, and on July 28 Napoleon set out to take the chief command, and on Sept. 2, the army with which he was present was compelled to surrender at Sedan. One of the immediate consequences of this disaster was a revolution in Paris. The empress and her son secretly quitted the French capital and repaired to England, where they took up their residence at Camden House, Chislehurst. Here they were rejoined by the emperor (who had been kept a prisoner of war for a short time) in March, 1871, and here he remained till his death, Jan. 9, 1873.

NAPOLEON, PRINCE (NAPOLEON EUGÈNE LOUIS JEAN JOSEPH BONAPARTE), Prince Imperial of France, son of Napoleon III.; born in Paris, France, March 16, 1856. He joined the British army in South Africa as a volunteer and was killed by the Zulus, June 2, 1879.

NARA, a city of Japan, the capital of the prefecture of the same name. In the 8th century it was the capital of Japan. It has many interesting temples. There are manufactories of ink, fans, and toys. Pop. about 35,000.

NARBONNE, a town of France; department of Audé, on the La Robine branch of the Canal du Midi; 8 miles from the Mediterranean and 93 E. S. E. of Toulouse. The removal since 1865 of the fortifications has been an improvement, but the place remains dirty and unattractive, with only three noteworthy buildings. These are the Romanesque Church of St. Paul (1229); the quondam cathedral of St. Just (1272-1332), only the fine Gothic choir of which, 131 feet high, has been completed; and the former archbishop's palace, now the city hall, in one of whose three old towers Louis XIII. in 1642 signed the order to arrest Cinq Mars, and in which are a good museum, a library, and a picture gallery. It has varied industries, including the production of leather, wines, and tools. Narbonne is the Narbo Martius of the Romans, their earliest colony (118 B. C.) beyond the Alps; and was a place of great commercial importance. Under Tiberius it flourished greatly, its schools for a long time rivalling those of Rome. About 309 A. D. it became the capital of Gallia Norbonensis, and had its capitol, forum, theater, aqueducts, triumphal arches, etc. In 412 it was taken by the Visigoths, in 719 by the Saracens, from whom it was recovered by Pepin in 759, to fall just a century later to the arms of the Northmen. During the 11th and 12th centuries it was a prosperous manufacturing city, but subsequently it deteriorated. Varro and Montfaucon were natives. Pop. about 28,000.

NARCISSUS, in Greek mythology, the beautiful son of Cephisus and the nymph Liriope. The story of his metamorphosis into the flower so called (see NARCISSUS) is given only in the version adopted by

Ovid; and this version says that he killed himself, and that the flower sprang from his blood.

NARCISSUS, an extensive genus of bulbous plants, mostly natives of Europe, natural order *Amaryllidaceæ*. The species are numerous, and from their hardiness, delicate shape, gay yellow or white flowers, and smell, have long been favorite objects of cultivation, especially the daffodil (*N. Pseudonarcissus*), the jonquil (*N. Jonquilla*), polyanthus narcissus (*N. Tazetta*), and white narcissus (*N. poeticus*). Some of the more hardy species grow wild in our woods and under our hedges.

NARCOTICS, remedies which produce stupor if the dose be increased beyond a certain point. Opium is the most important member of the group, and the type from which most descriptions of the action of this class of medicines have been drawn; but it includes substances of very various properties. Some, as alcohol, produce intoxication in lesser doses; some, as belladonna, delirium; most have a primary stimulating effect; in fact, almost every one presents some peculiarity in the way in which it affects the system, and no satisfactory general description of their minor effects is possible. Their power of inducing sleep has procured for them the names of hypnotics and soporifics; while many of them are termed anodynes, from their possessing the property of alleviating pain. Next to opium, Indian hemp, chloral and cocaine may be regarded as the most important narcotics. Numerous artificially produced organic compounds have been introduced during the last few years, some of which (*e.g.*, paraldehyde, sulphanol as hypnotics; antipyrin, exalgin—an aniline derivative—as anodynes) have taken a permanent place among useful remedies. The increasing and harmful use of narcotics has resulted in stringent laws to prevent their general sale. New York and other States have undertaken the cure of drug addicts on a large scale.

NARCOTINE, in chemistry, $C_{22}H_{23}NO_7$, one of the alkaloids of opium, and the first base extracted from that substance, discovered by Derosne in 1803. It forms lustrous rhombic prisms, which melt at 170°, and decompose at 220°. Insoluble in water and alkalies, but soluble in alcohol and ether. It is less poisonous than morphine, and its salts are very unstable.

NARES, SIR GEORGE STRONG, a British Arctic explorer; born near Aberdeen, Scotland, in 1831. He entered the navy and took part in the Arctic expedition of 1852-1854. From 1872 to 1874 he commanded the "Challenger" during her scientific expedition, and in 1875 was first in command of the North Polar expedition. He afterward was engaged in a survey of the South Pacific. He was the author of "Seamanship," "Reports on Ocean Soundings," "Voyage to the Polar Sea," etc. He died in 1915.

NAREW, a river of west Russia, rising in the government of Grodno and flowing westward, formed part of the former boundary of Poland. It joins the Bug river 19 miles N. of Warsaw. It has a total length of about 217 miles, of which about 212 miles are navigable. It is connected with the Niemen river and the Augustowo canal. The Narew river was the scene of much heavy fighting during the World War.

NARIÑO, coast department of Colombia, on S. W., with Ecuador on S. and Pacific on W. Is fertile in center, producing sugar-cane, cocoa, wheat, and barley. Pop. about 300,000.

NARNI, a city of Italy in the province of Perugia. It contains a number of interesting ruins of the time of Augustus. There is a cathedral dating from the 13th century, together with other ancient buildings of interest. Pop. about 15,000.

NARRAGANSETT BAY, an inlet of the Atlantic Ocean on the coast of Rhode Island; length about 28 miles (including the N. part called Providence Bay); width about 12 miles (at the N. part only 2 miles). It forms the E. boundary of the counties of Kent and Washington, and incloses several islands. The city of Newport is on the shore of this bay near its entrance or S. end. Large vessels can ascend it from the sea to Providence.

NARRAGANSETT PIER, a summer resort in Washington co., R. I., on W. shore of Narragansett Bay; 7 miles S. W. of Newport. It has an excellent beach, and a number of large hotels and handsome residences. The facilities for fishing and boating are excellent, and there are some notably fine drives amid charming scenery. At a distance of 3 miles are Narragansett Heights, 400 feet above the bay. The Pier has regular steamboat connection with Providence.

NARRAGANSETTS, a tribe of North American Indians which, in the early history of the United States, occupied the part of Rhode Island W. of Narragansett Bay. They were nearly destroyed during King Philip's war.

NARVA, a town of Russia; 101 miles W. S. W. of Petrograd, on the Narova, 10 miles from its mouth in the Gulf of Finland. The navigation of the Narova is impeded by a waterfall near Narva, 14 feet high, which is taken advantage of for driving cotton mills, sawmills, etc. Charles XII. won a great victory here in 1700.

NARWHAL, NARWAL, or NARWHALE, a cetacean, called also the sea-unicorn; the *Monodon monoceros*. The name sea-unicorn is given because the male has a horn 6, 7, or even 10 feet long, one of the teeth in the upper jaw extraordinarily prolonged. It is the left tusk which makes the horn, the right being rarely developed. The tusk is spirally furrowed, and is of ivory, like the tusk of an elephant. The length of the narwhal varies from 15 to 20 or 22 feet, the head being one-fourth of the whole, and the horn one-half.

NASEBY, a parish of Northamptonshire, England, 7 miles S. W. of Market-Harborough. Here, on June 14, 1645, 7,500 royalists under Charles I. and Prince Rupert were totally defeated by 14,000 parliamentarians under Fairfax and Cromwell, the king losing cannon, baggage, and 5,000 prisoners. An obelisk was erected in 1823 on the Naseby ridge (648 feet).

NASH, RICHARD, called **BEAU NASH**, an English leader of fashion; born in Swansea, Wales, Oct. 18, 1674. He was the son of an impoverished Welsh gentleman and was educated at Carmarthen and Oxford; held for some time a commission in the army, and next entered at the Middle Temple, but found greater attractions in the dissipations of society than the pursuits of law. He made a shifty living by gambling, but in 1704 he found his true function as master of ceremonies at Bath, where he conducted the public balls with a splendor and decency never before witnessed. He died in poverty, Feb. 3, 1761.

NASH, THOMAS, an English satirist and dramatist; born in Lowestoft, Suffolk, England, in 1567. He graduated at Cambridge in 1584, but was afterward expelled for satirizing the authorities. In conjunction with Marlowe he wrote a drama, "Dido, Queen of Carthage," and in 1592 produced a comedy of his own, "Summer's Last Will and Testament," which was acted before Queen Elizabeth. He died in 1600 or 1601.

NASHUA, a city and one of the county-seats of Hillsboro co., N. H.; on the Nashua river and on the Boston and Maine railroad; 35 miles S. of Concord. It contains a public library, several public institutions, several daily papers, electric lights, electric street railroads, waterworks, and National and savings banks. It has manufactories of edge tools, iron and steel, engines, shoes, bobbins and shuttles, locks, cotton goods, furniture, carpets, etc. Pop. (1910) 26,005; (1920) 28,379.

NASHVILLE, a city, port of delivery, and the capital of the State of Tennessee; on the Cumberland river, and on the Nashville, Chattanooga and St. Louis, the Louisville and Nashville and the Tennessee Central railroads; 233 miles E. N. E. of Memphis. This city is regarded as the most important educational center in the South, and in population is the largest city in Tennessee. It is built on undulating grounds with the exception of Capitol Hill, which is very abrupt.

Business Interests.—Nashville occupies a foremost place among the manufacturing centers of the country. It is the largest hardwood flooring and flour-mixing market in the world and has the largest stove, commercial fertilizer, live stock and printing market south of the Ohio river. Other large manufacturing industries include boots and shoes, candies, cotton and burlap bags, hosiery, overalls, work shirts, collars, handkerchiefs, furniture, bricks, saddles, harness, burial caskets, and butter; and large jobbing interests, covering practically all lines. Bank clearings for 1915, $322,901,654.15; for 1919, $863,911,695.91. About $100,000,000 of live stock handled in 1919.

Public Interests.—The city has an area of 10 square miles; an excellent street system, and modern water and sewer systems. There is a public school enrolment of over 20,000, and annual expenditures for public education of over $450,000. The annual cost of maintaining the city government is nearly $2,000,000. Nashville is the seat of Vanderbilt University, Fisk University, George Peabody College for Teachers, Ward-Belmont College, Knapp School of Country Life, Meharry Medical College, and State Normal School for negroes. There are 22 city parks and playgrounds, and 41 hospitals, homes, and asylums.

History.—Nashville was settled in 1780; received its city charter in 1806; was the capital of the State in 1812-1815 and in 1826-1843; and in the latter year was made the permanent State capital. It was occupied by Union troops in 1862, and was the scene of a noted battle in 1864. In 1897 the Tennessee Centennial

Exposition was held near West End Park, and some of the handsome buildings were left standing. About 12 miles E. of Nashville is The Hermitage, the home of Andrew Jackson, which contains the log cabin in which he was born, and near by it his tomb. Pop. (1900) 80,-865; (1910) 110,364; (1920) 118,342.

NASHVILLE, BATTLE OF, a desperate battle fought near Nashville, Tenn., Dec. 15-16, 1864. In November of that year, Atlanta having been taken, the Confederate General Hood invaded Tennessee. On Nov. 30, he advanced against Nashville, where he shut up a National force under General Thomas for two weeks. The latter then sallied out and in a terrible conflict of two days defeated the Confederates. The Union loss was 400 killed and 1,740 wounded; the total Confederate loss was estimated at 15,000.

NASIK, a town of Bombay, British India, on the Godavari, 31 miles from its source, and 100 miles N. E. of Bombay. It ranks as one of the most sacred of Hindu places of pilgrimage, the banks and even the bed of the river being crowded with temples and shrines. Formerly it was a Mahratta capital; now it manufactures paper, cotton, and excellent brass and copper work. Pop. about 35,000.

NASMYTH, JAMES, a British engineer and astronomer; son of A. Nasmyth; born in Edinburgh, Scotland, Aug. 19, 1808. He was educated at the School of Arts, Edinburgh, and in engineering under Maudsley in London. He removed in 1834 to Manchester, England, where he became a successful machine constructor and inventor. The steam hammer, which has rendered possible the immense forgings now employed, was invented by him in 1839. The steam pile driver, and the safety foundry ladle, are among his other inventions. He also acquired fame as a practical astronomer. He died in London, England, May 7, 1890.

NASR-ED-DIN (Shah of Persia). born in Teheran in 1831; died in 1896. Though not the eldest son of his father, Mohammed Mirza, the influence of his mother caused him to be proclaimed heir. Came to the throne in 1848. His right of accession was strongly disputed by El Beb, a leader of the people, but the new Shah succeeded in holding his throne. At an early age he showed himself keenly alive to the deficiencies of his people and made a deep study of western European methods f government, finance, and military organization. In 1856 he precipitated a war with Great Britain by his occupation of Herat, hostilities lasting a year. Later he made a number of visits to western Europe and established friendly relations, especially with London. His reign marked a long step in advance toward civilization by his people, especially in the field of applied science. He was finally assassinated by political opponents.

NASSAU (näs'sou), formerly a German duchy, now a district of the Prussian province of HESSE-NASSAU (*q. v.*). The soil is fertile and produces some of the most esteemed Rhenish wines. The chief towns are WIESBADEN (*q. v.*), the capital of the district; Schwalbach, Schlangenbad, Fachingen, Selters, and Geilnau. The family of Nassau, the elder branch of which reigned till 1866, dates from the 10th century. The younger branch inherited in 1544 the principality of ORANGE (*q. v.*), and as the princes of Orange took an important place in European history (see HOLLAND). The reigning Duke of Nassau sided against Prussia in 1866, and his duchy was incorporated with Prussia (see PRUSSIA: GERMANY); and on the extraction of the male line of the Orange branch by the death of William III. of Holland, in 1890, the Duke of Nassau became Grand-Duke of Luxemburg.

NASSAU, FORT, an old fort on the Islands and the center of the trade and seat of government of the BAHAMA ISLANDS (*q. v.*), and a bishop's see. Pop. about 12,000.

NASSAU, FORT, an old fort on the Delaware river, near the site of the present city of Gloucester, N. J., memorable as the first settlement on the shores of the Delaware, and built by Capt. Jacobus May, in 1631.

NAST, THOMAS, an American artist; born in Landau, Bavaria, Sept. 27, 1840; was educated in the public schools of the United States. He began early to draw and contributed illustrations to various papers, notably "Frank Leslie's Illustrated Newspaper," and "Harper's Weekly." He also illustrated a large number of books, and lectured throughout the country, introducing the system of drawing on a blackboard the various characters or subjects under consideration. He is best known for his political cartoons, which were of great influence in the various political campaigns, and were exceptionally effective in exposing the "Tweed ring," He died in 1902.

NASTURTIUM, the botanical name of the watercress; also the popular desig-

nation of the Indian cress (*Tropæolum majus*). The genus *Tropæolum* is the type of the small natural order *Tropæolaceæ*, and comprises some beautiful garden climbers, such as the widely cul i-vated canary creeper (*T. aduncum*), a native of Peru, and the more recently introduced *T. speciosum*, a native of Chile.

NATAL, a British colony on the S. E. coast of Africa, one of the original provinces of the Union of South Africa. It is bounded by the Transvaal province, Portuguese East Africa, the Indian Ocean, Cape of Good Hope province, Basutoland, and the Orange Free State province; area, est. 35,019 square miles; pop. about 1,250,000. The only spot where sheltered anchorage can be obtained is at Port Natal, a fine circular bay near the center of the coast (see DURBAN). The surface is finely diversified, rising by successive terraces from the shore toward the lofty mountains on its W. frontiers. The chief summits are Champagne Castle, 10,357 feet; Mont aux Sources, about 10,000 feet; and Giant's Castle, 9,657. The mineral productions are principally coal, ironstone, limestone, and marble; gold has also been found in various localities. The province is well watered, but none of its rivers are navigable. The most important rivers are the Tugela, Umvoti, Umgeni, Umkomaas, and Umzimkulu. The climate on the whole is extremely salubrious. There are large forests on the W. and N. frontiers. The soil is generally rich and strong. On the higher forest and table-land cattle thrive well; and in the interior wheat, corn, barley, oats, maize, beans, and vegetables of almost every description have been largely and successfully grown. Corn is the chief agricultural product. There is a considerable trade. The exports and imports are valued at about $100,000,000. In some regions tobacco, indigo, sugar-cane, and coffee grow well. The hippopotamus still has his haunts in several of the rivers, and there are numbers of small crocodiles. The birds comprise the vulture, several varieties of eagle, the secretary-bird, wild turkey, etc. Natal was discovered on Christmas Day, 1497, by Vasco da Gama, a Portuguese, and named by him "Terra Natalis." The first settlers were the Dutch Boers, who left Cape Colony in 1836, and in 1839 removed to Port Natal and proclaimed themselves an independent republic. The establishment of a hostile settlement at the only port between Algoa and Delagoa Bays was incompatible with British interests, and in 1845 Natal, after a formidable resistance by the Boers, was proclaimed a British possession. In 1856 it was separated from Cape Colony and made a separate colony.

The province of Zululand was annexed to Natal, Dec. 30, 1897, and in 1903 several districts formerly belonging to the Transvaal were also annexed. In 1910 it became the original province of the Union of South Africa. There is a governor appointed by the British crown, a Ministry of five members, a legislative council of 25 members. Religion is well provided for by denominational bodies. Provision is made for education for both whites and natives. The capital is Pietermaritzburg; pop. (1918) 34,645.

NATALIE, QUEEN OF SERBIA, born in 1859, daughter of Peter Ivanovitch Kischko, a Russian officer; married Prince Milan in 1875, who later became King of Serbia. In 1888 they were divorced. A year later Milan abdicated, and Natalie returned to Belgrade to live with her son, King Alexander. Her pro-Russian intrigues caused her to be expelled from the country in 1891, but was allowed to return to Belgrade two years later, when she became reconciled to Milan. After the assassination of King Alexander, in 1903, she was again compelled to leave Serbia, and then lived in France.

NATCHEZ, a city and county-seat of Adams co., Miss.; on the Mississippi river, and the Yazoo and Mississippi Valley, the Mississippi Central, the Natchez and Southern, and the St. Louis, Iron Mountain and Southern railroads; 100 miles S. W. of Jackson. It is the shipping port for a large cotton region, exporting annually many thousands of bales. Here are a State Hospital, Fisk Library, Carpenter Library, Natchez Institute, Memorial Park, street railroads, electric lights, and several banks. The city has cotton mills, cotton-seed oil mills, cotton compress, artificial ice plant, saw and planing mills, etc. Natchez was settled by the French about 1713, and was a military and trade post till 1764. It then became a possession of Great Britain and later passed into that of Spain. In 1798, under a treaty between Spain and the United States, it was ceded to the latter. It was made the State capital and remained so till 1815. During the Civil War it was taken by Admiral Farragut. The name, Natchez, is derived from a noted tribe of Indians. Pop. (1900) 12,210; (1910) 11,791; (1920) 12,608.

NATCHEZ, a tribe of Indians, which owed its celebrity chiefly to Chateau-

briand's "The Natchez." They resided in the W. part of Mississippi, near the banks of the Mississippi river.

NATHAN, GEORGE JEAN, American dramatic critic, born in Fort Wayne, Ind., Feb. 15, 1882. Graduated at Cornell in 1904. Member of "N. Y. Herald" staff 1904-1906. Dramatic critic and assistant editor of "The Bohemian," 1906-1908. Contributed articles on the drama to "Harper's Weekly," 1908-1910, and to the "Associated Sunday Magazines," 1909-1914. Dramatic editor of "The Smart Set" since 1908, and has been editor since 1914. Author of "Another Book on the Theater" (1916); "Bottoms Up" (1917); "Mr. George Jean Nathan Presents" (1917); "A Book Without a Title" (1918); "Comedians All" (1919).

NATICK, a town of Massachusetts, in Middlesex co. It includes several villages. It is on the Charles river and on the Boston and Albany railroad. It has several important educational institutions, including the Walnut Hill School for young women. It has the Morse Institute, which includes a public library and reading room; the Morse Hospital, and the Bacon Public Library. There are parks, a soldiers' monument, and a monument to the memory of John Eliot. The industries include the manufacture of boots, shoes, shirts, clothing, baseballs, boxes, saws, etc. Natick was founded by John Eliot in 1651, and was incorporated in 1781. Pop. (1910) 9,866; (1920) 10,907.

NATIONAL ACADEMY OF DESIGN. See ACADEMY OF DESIGN, NATIONAL.

NATIONAL ACADEMY OF SCIENCES. A society formed in 1863 for investigation of scientific subjects and for the promotion of scientific research in America. Members must be citizens of the United States. Two meetings are held annually; one, the spring meeting, is always held in Washington, the other meeting in the autumn may be held anywhere. In 1914 President Wilson requested the society to appoint a member to investigate conditions on the Pribilof Islands for the purpose of suggesting means for the preservation of the fur-seal herd there. The same year the society awarded a gold medal to General Goethals and General Gorgas for their work in the building of the Panama canal. By virtue of a fund given to the society two or three lectures are given at the semi-annual meetings by distinguished scientists from the United States and foreign countries. The United States Government has frequently called upon the society to undertake special fields of scientific research at the Government's expense. The society has about 150 members and about 50 foreign associates.

NATIONAL ASSEMBLY, the legislative assembly in France. When the nobility and clergy summoned with the Tiers Etat to the States-General declined to sit with the Commons, these declaring, on June 17, 1789, that they represented 96/100 parts of the nation, assumed the name of the National Assembly, though the name Constituent Assembly is more frequently employed.

NATIONAL BANKS. See BANKS IN THE UNITED STATES.

NATIONAL CEMETERIES, the name given to establishments, instituted by Act of Congress, for the interment of United States soldiers who have fallen in battle, and whose graves become, accordingly, a sacred National charge. These graves are distributed in 84 special, or "National," cemeteries. The names of over 175,000 (more than one-half) of the dead have been preserved and attached to the graves. Of the whole number, less than one-fifth now repose in their original graves.

NATIONAL CIVIC FEDERATION, an organization formed in 1902 by prominent representatives of capital, labor, and the general public. Its purpose is to organize the best intellectual forces of the Nation in an educational movement, for the purpose of seeking a solution of some of the great problems relating to social and industrial progress. The work of the Federation is carried on through various agencies or departments, the most important of which are the Industrial Conciliation Department, dealing with strikes and other labor troubles; the Industrial Economics Department; the Welfare Department; the Women's Department; the Department of Compensation for Industrial Accidents and their Prevention; the Social Insurance Department; the Department of Regulation of Combinations and Trusts; the Department of Regulation of Interstate and Municipal Utilities; and the Pure Food and Drugs Department.

During the World War the Federation carried on important work through its various agencies and, following the war, in 1919 and 1920, it was especially active in spreading propaganda against Bolshevism. In 1919 a commission was sent to France and Italy for the purpose of studying industrial conditions in those countries. The Federation also took an active part in behalf of the League of

Nations. V. Everit Macy retired as president of the Federation in 1919, and was succeeded by Judge Alton B. Parker. The official organ of the National Civic Federation is the "National Civic Federation Review."

NATIONAL CONFERENCE OF CHARITIES AND CORRECTIONS, a national organization founded in 1874 to discuss problems of the administration of charity, and to promote progressive methods of dealing with dependents, defectives, and delinquents. An annual conference is held at which representatives of philanthropic private and State institutions come together to consider reform legislation, and other problems of their work. The annual proceedings of the conference show the great advance which has been made in the United States in relief and correctional work. In recent years more attention has been paid to preventive and educational work, such as scholarships, vocational training, and minimum wage, social insurance, and health legislation.

NATIONAL CONVENTION, in France, a legislative body constituted in the hall of the Tuileries, Sept. 17, and formally opened, Sept. 21, 1792, when M. Grégoire, at the head of the National Assembly, announced that that assembly had ceased its functions. It was then decreed, "That the citizens named by the French people to form the National Convention, being met to the number of 371, after having verified their powers, declare that the National Convention is constituted." This convention continued till a new constitution was organized, and the executive directory was installed at the Little Luxembourg, Nov. 1, 1795. The Chartists in England formed a National Convention in 1839.

NATIONAL DEBT. See DEBT, NATIONAL.

NATIONAL GALLERY, the principal depository of the pictures belonging to the British nation. The present building, which was intended to accommodate the Royal Academy and National Gallery, stands in Trafalgar Square, London, and was finished in 1838 at a cost of $500,000. The collection is most valuable to the student of art, and occupies more than 22 rooms. The various early and late Italian schools are extensively illustrated; there are good examples of the chief representatives of Italian art, as Raphael, Correggio, Paul Veronese. There are a few good examples of Murillo and Velasquez and the Spanish school; and the great Dutch and Flemish painters, Rembrandt, Rubens, Van Dyck, etc., are well represented. In the department of the "British and modern schools" the largest additions as yet made by private munificence are the gift of 157 pictures, made in 1847, the bequest of Joseph M. W. Turner, R. A., in 1856, the bequest of Henry Vaughan in 1900, and of George Galting in 1910. There are also national galleries of art in Edinburgh and Dublin; the great public collections of Paris, Berlin, Dresden, Munich, Florence, Rome, etc., are mentioned in the articles on those cities.

NATIONAL GUARD. See MILITIA, STATE.

NATIONAL MONUMENTS. On June 8, 1906, Congress passed a law which gave to the President power by proclamation to declare historic landmarks, and objects of historic or scenic interest that are on property controlled by the United States, National monuments. They are not materially different from National parks, except that Congress has never appropriated money for their maintenance nor created any especial commission to provide rules for them. Consequently they are distributed for the purposes of government between the Secretary of Interior, the Secretary of War, and the Secretary of Agriculture. Those controlled by the Secretary of Interior are: Natural Bridges, Utah (2,740 acres), containing the Augusta Bridge, El Morro, N. M., an enormous rock on which the early Spanish explorers have carved inscriptions; and Muir Woods, Cal. (295 acres). Under the control of the Secretary of War is Big Hole Battlefield, Montana (5 acres). Under the jurisdiction of the Secretary of Agriculture are: Grand Cañon, Ariz. (806,400 acres), Lassen Peak, Cal. (1,280 acres), Gila Cliff Dwellings, N. M. (160 acres), and Mount Olympus, Wash. (608,480 acres), a mountain area which is the breeding ground for great numbers of elk.

NATIONAL OBSERVATORY, THE, a Government institution, Division of the Navigation Bureau of the Navy Department, Washington, D. C. Here the position of the sun, moon, planets, and stars is determined for "The American Ephemerics and Nautical Almanac," and standard time is issued by radio and telegraph at noon and 10 p. m. for navigation, and the general public. The institution also purchases, tests, and repairs instruments used in the navy, and conducts investigations of scientific and general interest. The observatory developed from the Chart and Instrument Depot of the Navy Department of 1838. Lieutenant Wilkes at his own expense built an

observatory on Capitol Hill in this year, and the Secretary of the Navy directed the purchase of necessary instruments for observations in meteorology, and astronomy. The results accomplished at the observatory were published in 1846, the first American work of its kind. Congress authorized the erection of a National observatory in 1842, and under Lieutenant M. F. Maury a special study was made of ocean currents, and hydrography.

Recording observations by electricity was begun in 1849. Professor Asaph Hall in 1877 discovered satellites of Mars through Alvan Clark's 26-inch lens telescope, the largest made up to that time. In 1893 the observatory was moved to Georgetown Heights. Since 1893 the observatory has co-operated with other nations in astronomical work. In 1913-1914 the observatory, acting with the French, made the first direct determination of the difference of longitude between Washington and Europe by exchange of radio signs from Arlington and the Eiffel Tower station, Paris. The National Observatory has published 50 volumes descriptive of its work.

NATIONAL PARKS AND RESERVATIONS, certain public lands of the United States which have been reserved from settlement, and are retained and improved by the United States Government as National parks. Their location and area in 1920 were as follows:

National Parks in Order of Creation	Location	Area in Sq. Miles
Hot Springs, 1832	Middle Arkansas.....	1½
Yellowstone, 1872	Northwest. Wyoming..	3,348
Sequoia, 1890	Middle E. California..	252
Yosemite, 1890	Middle E. California..	1,125
General Grant, 1890	Middle E. California..	4
Mount Rainier, 1899	West c'tr'l Wash'ton..	324
Crater Lake, 1902	Southwestern Oregon..	249
Wind Cave, 1903	South Dakota	17
Platt, 1904	South Oklahoma.....	1⅓
Sullys Hill, 1904	North Dakota	1⅕
Mesa Verde, 1906	Southw'st'n Colorado...	77
Glacier, 1910	Northw'st'n Montana..	1,534
Rocky Mountain, 1915	N. middle Colorado...	398
Hawaii, 1916	Hawaiian Islands.....	118
Lassen Volcanic, 1916	Northern California...	124
Mount McKinley, 1917	South central Alaska..	2,200
Grand Canyon, 1919	North central Arizona..	958
Lafayette, 1919	Maine Coast	8

NATIONAL PORTRAIT GALLERY, founded in 1856, was established at South Kensington, in 1869, but removed on loan to the Bethnal Green Museum in 1885. In 1891, when the collection comprised nearly 900 portraits, a building for its special use was in progress at the rear of the National Gallery.

NATIONAL SECURITY LEAGUE, an organization founded in 1914 by citizens of the United States who believed that the World War showed the necessity for greater armament on the part of the United States. While not committing itself to any particular plan of National defense, the League favored a much larger army and navy and used its effective organization to bring pressure upon Congress to grant the necessary appropriations. It enlisted members from all parts of the United States, and engaged in a publicity campaign to make known to the voters the need of "Preparedness." During the war the league used its organization in aiding the draft and in other work of assistance to the Government.

NATIONAL SOLDIERS' HOMES. See SOLDIERS' HOMES.

NATIONAL UNION, American fraternal organization, incorporated in 1881, under the laws of Ohio, with headquarters in Toledo, O. In 1920 there were over 700 local councils organized, with a total membership of over 60,000. Insurance policies amounting to over $150,000,000 are carried by the members, and over $45,000,000 has been paid out in death benefits since the order was established.

NATUNA ISLANDS, three groups of islands extending from the W. coast of Borneo a great way to the N. W. The largest, Great Natuna, is about 30 miles long N. to S., and 20 miles broad E. to W. They are densely wooded.

NATURAL BRIDGES, tunnels eaten through rocks by streams, etc. There are 10 of these natural curiosities, many of them of great beauty, in various parts of the United States; that of Virginia being the most celebrated. The arch of this one is 60 feet spring, depth 200 feet, crown 40 feet thick. In Walker co., Ala., is a natural bridge in which the stone is so stratified as to resemble masonry. In Trinity co., Cal., a small river runs for 3,000 feet through an arch of 80 feet span and 20 feet high. In Adams, Berkshire co., Mass., the Hudson Brook flows for 30 rods under an arch of white marble. At the village of Natural Bridge, N. Y., Indian river flows through a series of arches.

NATURAL GAS, carburetted hydrogen, issuing from the earth in springs or wells. The fire damp of coal mines is practically the same gas, which was produced during the formation of the coal from vegetable matter and is set free by the miner's pick. Natural gas is generally found in connection with pools of petroleum. Though natural gas has long been known and is found in abundance at Baku, on the Caspian Sea, its practical development belongs to the industrial history of the United States. Natural gas is found in nearly all sections of the United States. The most important producing States are West Virginia, Oklahoma, Pennsylvania, Ohio, California, Louisiana, Kansas, Texas, and New York.

The first extensive use of this gas was at Fairview, Pa. In 1775 it was first applied to iron smelting; and in 1886 it was brought to Pittsburgh, Pa., from a reservoir 19 miles distant and introduced as a substitute for all other kinds of fuel, for domestic and economical purposes.

The total number of gas wells in the United States at the close of 1917 was 39,277, a gain of 2,000 wells over the previous year.

The approximate value of natural gas produced in the United States in 1917 was as follows: California, $6,816,524; Kansas, $5,201,436; New York, $2,499,303; Ohio, $18,434,814; Pennsylvania, $28,716,492; Texas, $3,192,625; West Virginia, $59,389,161; Louisiana, $3,262,987; Oklahoma, $13,984,656. Total, $142,089,334. This amount does not include value of gas produced in Canada and consumed in the United States. The production in 1919 was about 638,600,000 cubic feet.

NATURAL HISTORY, in the widest sense, and as used by the ancients, that branch of knowledge which included all natural science, and had the Cosmos for its subject. In more recent times its range was limited to zoölogy; now again, its bounds are extended, and it may be defined as the science which deals with the earth's crust and its productions. Thus it includes geology, mineralogy, palæobotany, and palæontology, treating respectively of the inorganic world and organic remains of past ages. To these succeed biology, or the science of life, in its widest science (see BIOLOGY). Popularly, natural history is synonymous with ZOÖLOGY (*q. v.*), and some writers of authority use it in that sense.

NATURALISM, in theology, the name given to all forms of belief or speculation which deny or ignore the doctrine of a personal God as the author and governor of the universe. It is opposed to Theism.

NATURALIZATION, in law, the act of placing an alien in the position, or investing him with the rights and privileges of a natural-born subject. The naturalization laws of the United States are wholly the fabric of the Federal Government, while the privileges attendant, so far as regards suffrage, etc., are left to the discretion and gift of the various State legislatures. For a foreigner to become a citizen of the United States it is necessary for him, first, to declare his *bona fide* intention to become a citizen, and the declaration must be made at least two years before "final papers" are taken out. It must be made before a United States Circuit or District Court, or (in a Territory) before the Supreme Court or District Court, or (in a State) before a court having a common law jurisdiction and a clerk and seal. At the time of admission to citizenship, the applicant must have been, at least five years previously, a resident of the United States, and must produce evidence that he is a fit subject on whom to confer the rights of citizenship, and must, further, renounce allegiance to all foreign princes and governments—particularly to the one to which he was last subject. After admission he is, in all respects, a citizen of the United States and entitled, in every regard, to the same protection that the native-born citizen is. In the case of children of a foreigner, who, at the time of their father's naturalization, were not of legal age, the act of the father is considered as conferring citizenship on them, and further process is unnecessary. Chinamen cannot be naturalized. The children of citizens of the United States, if born abroad, are American citizens, and entitled to protection as such. In some of the States a foreigner who has declared his intention to become a citizen is permitted to vote, while in others none but full-fledged citizens are admitted to that privilege. By a law of 1913 all matters relating to naturalization were in the hands of the Bureau of Naturalization of the Department of Labor. By a law passed by Congress in 1919 honorably discharged soldiers and sailors who served in the World War are exempted from declaration of intention, fees, and proof of five years' residence.

In biology, the introduction of plants through human agency into new lands or regions.

NATURAL SELECTION, a phrase frequently employed in connection with Darwin's theory of the origin of species, to indicate the process in nature by which plants and animals best fitted for

the conditions in which they are placed survive, propagate, and spread, while the less fitted die out and disappear; this process being combined with the preservation by their descendants of useful variations arising in animals or plants.

NATURE STUDY, a course in the elementary schools designed to give the child some acquaintance with the world of nature, centering attention chiefly on trees, birds, and flowers. A study of nature has been for a considerable time part of the curriculum of elementary schools, but recently the influence of Horace Mann and his emphasis on "object study" has largely changed the methods of instruction. Instead of being taught in the formal class-room method, it is now conducted in such a way that the children come in direct contact with natural animals and objects. For this reason the course is most successfully conducted by schools situated in the country or in suburban districts. Walks are taken by the class in company with the teacher to find the birds and flowers appropriate to the season, and the students are taught first to recognize the varied types of animal and floral life. Frequently the children have in their possession picture books of the various birds with their haunts and characteristics given. A very successful method is to encourage rivalry among the students in being the first to discover certain birds when they appear in the spring of the year. As the main objective of the course is to encourage delight and arouse interest in the natural world, any intensive study of a particular species is out of place. The course is not designed to be an introduction to biology. One very useful product of nature study properly taught has been the disappearance of vandalism among the children. The robbing of birds' nests, the destruction of wild flowers and the pestering of wild animal life, considered formerly to be one of the essential earmarks of a boy, have ceased to exist and have given place to an intelligent enjoyment of outdoor life on the part of children. Civic pride and the cultivation of private flower gardens are also among the valuable by-products obtained from the study. The subject of elementary geography has been largely influenced by the methods offered in nature study. The student now begins his work by a study by first-hand observation of the trees, rocks, and bodies of water surrounding his home. Maps are drawn of the locality and are tested for accuracy by frequent observation trips. Text books covering this new type of study are but recent appearances, the older type of book being quite valueless. The most widely used books are those by Thornton W. Burgess and the Bird and Flower Guides, written by Chester A. Reed. Another useful book and guide is Neil M. Ladd's "How to Make Friends with Birds."

NATURE WORSHIP, a generic term to denote a stage of religious thought in which the powers of nature are personified and worshipped. It found its highest and most beautiful expression in the mythology of ancient Greece.

NAUCRATIS, an ancient city of Egypt, in the Nile delta, near the modern village of Nebireh; 47 miles S. E. of Alexandria; existed in the 7th century B. C. It was the only city in Egypt at which the Greeks were allowed to trade; was celebrated for its artistic pottery; and was a center for the worship of Aphrodite. The site was discovered by Flinders Petrie in 1884, and excavated by him in that and the following year.

NAUGATUCK, a town and borough of Connecticut in New Haven co. It is 5 miles S. of Waterbury and on the New York, New Haven and Hartford railroad. The city is an important industrial center and has manufactures of india-rubber goods, underwear, iron and copper goods, and paper boxes. It contains the Whittemore Memorial Library and the Whittemore Memorial Bridge. It has a handsome high school and other public institutions. Pop. (1910) 12,722; (1920) 15,051.

NAUGATUCK RIVER, a river of Connecticut, rises in Litchfield county, runs S. through New Haven county, and enters the Housatonic river at Derby. It is nearly 65 miles long. The chief city on its bank is Waterbury.

NAUMBURG (noum'börG), a quaint old town of Prussian Saxony, on the Saale, 30 miles S. W. of Leipsic. Of its six churches, the triple-towered cathedral (1207-1242) is a noble Romanesque and Gothic structure. Prior to the World War the manufactures included ivory carvings, combs, hosiery, toys, wine, etc. The seat of a bishopric (1059-1564), Naumburg suffered much in the Thirty Years' War; in 1814 it came to Prussia. Pop. about 27,500.

NAUPLIA, a small fortified town and seaport with an excellent roadstead in the Morea, Greece, at the N. extremity of the Gulf of Argos or Nauplia, 25 miles S. of Corinth. It has naval yards and ordnance works. At an early period it was the port and arsenal of Argos. In

the 13th century it was occupied by the Venetians (who called it Napoli di Romania), and it was taken by the Turks in 1540. From 1824 to 1835 it was the capital of Greece, and had a population of upward of 12,000; but on the removal of the court to Athens it fell into decay. Pop. about 13,000.

NAUTCH GIRL, or **NAUTCHEE**, a professional dancing and singing-girl in India. They are selected for their beauty, generally from the middle class of life, and when very young are placed under strict training in physical exercises and taught all the arts of their profession.

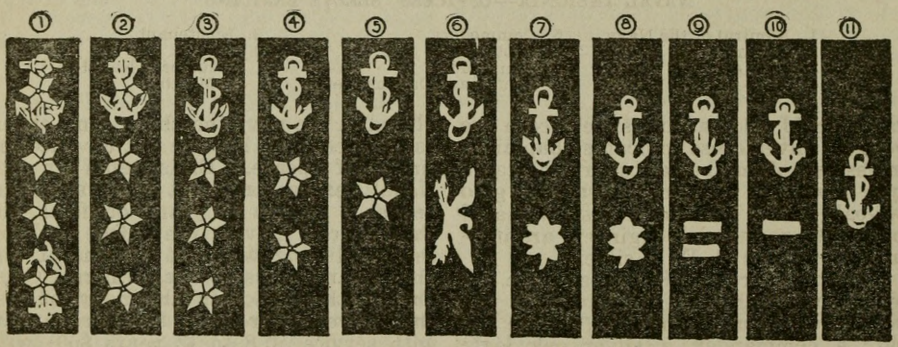
NAUTILUS, in ordinary language, a name popularly applied to two very different animals: the paper nautilus—the nautilus of poets, hich belongs to the genus *Argonauta* (see ARGONAUT), and not to nautilus; and to the pearly nautilus (*N. pompilius*), for a long period the only known species. In zoölogy, the typical and only recent genus of the family *Nautilidæ*. The shell is involute, with an outer porcellaneous and an inner nacreous layer.

NAUVOO, a village of Illinois, on the Mississippi river; 14 miles above Keokuk. It was built by the MORMONS (*q. v.*) in 1840, and in a few months contained a population of 15,000. Its principal feature was a great temple of white limestone (1841-1845); but it had also mills and factories, and the beginnings of a university, and was for a few years a prosperous and happy town. After the expulsion of the Mormons in 1846, the temple was half destroyed by fire in 1848, and further ruined by a tornado in 1850. Pop. about 1,000.

NAVAJO (nav'a-hō) **INDIANS**, a half-civilized tribe of the Athabascan group. They have a reservation in northeastern Arizona, extending in New Mexico and Utah. They have considerable native civilization, not a few of them engaging in agriculture, and in raising horses, sheep, and goats. They weave blankets, which are prized highly throughout the Southwest. They are a fine athletic race and excellent horsemen. While not an aggressive tribe, they have frequently been at war with the whites. They number about 22,000.

NAVAL ACADEMY, UNITED STATES. See UNITED STATES NAVAL ACADEMY.

NAVAL INSIGNIA. The devices used to indicate the ranks, ships, and squadrons of officers in naval service. Those devices, which take the form of stars, gold lace, anchors, leaves, stripes and the like, are those, like the uniforms, in vogue among the navies of the world, differing only in details. In the United States navy the insignia used are representative of those in use in the navies of other countries. The rank of the officer is shown by gold lace on the sleeve and devices on the collar, epaulet and shoulder. Admirals wear two stripes of two-inch lace and one stripe of half-inch lace between them. Rear-admirals have one stripe of two-inch lace and one of half-inch lace above it. Captains have four stripes of half-inch lace; commanders, three stripes of half-inch lace; lieutenant-commanders, two stripes of half-inch lace and a stripe of one-quarter-inch lace between them; lieutenants, two stripes of half-inch lace; lieutenants of the junior grade, a stripe of half-inch lace and a stripe of one-quarter inch



NAVAL INSIGNIA—OFFICERS' INSIGNIA ON COLLAR

1. Admiral of the Navy
2. Admiral
3. Vice-Admiral
4. Rear-Admiral
5. Commodore
6. Captain
7. Commander (Silver Leaf)
8. Lieutenant-Commander (Gold Leaf)
9. Lieutenant
10. Lieutenant Junior Grade
11. Ensign

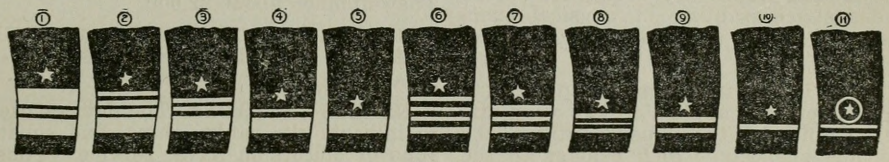
lace above it; ensigns, one stripe of half-inch gold lace.

A gold star on the sleeve above the lace indicates officers of the line of executive branch. The lace is worn on the shoulder instead of on the sleeve on the overcoat and white service coat. The rank emblem and corps device are the devices indicating rank which are worn on the epaulet and collar. The corps ornament is a silver foul anchor for line officers and sprig of silver oak leaves for pay corps. In the case of the medical corps a gold oak leaf and silver acorn are worn; a silver cross indicates chaplains; professors of mathematics are indicated by a silver oak leaf and acorn; two gold live-oak leaves and acorn show naval constructors, and civil engineers are indicated by letters C. E. in silver.

Ensigns wear only the corps device. A lieutenant of the junior grade has one bar; a lieutenant commander, a gold oak leaf; a commander, a silver oak leaf; a captain, a silver eagle; a rear admiral, two silver stars and a silver foul anchor or other corps ornament between them; an admiral, four silver stars with a gold foul anchor under the outer ones. On the overcoat the shoulder mark and mohair stripes indicate the rank. A crossed anchor for boatswains, a bursting shell for gunners, a gold chevron for carpenters, a gold propeller for warrant machinists, are collar ornaments in the rank and file.

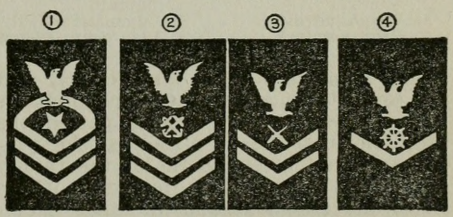
NAVAL INSTITUTE, UNITED STATES, an association of naval officers having for its object the spreading of information about naval affairs among the officers of the United States Navy. It was founded in 1873 by the officers of the United States Naval Academy and now publishes bimonthly its "Proceedings," which is one of the largest and most authoritative periodicals on naval affairs in the world. The institute annually offers a prize of $200 and a gold medal to the best essay on any matter pertaining to naval affairs. All officers of the navy and persons holding positions in the Navy Department can become members.

NAVAL RESERVE, a drilled and instructed force which supplements the active naval force in time of war, and in peace is employed on yachts, or merchant marine, or are pensioners who have served their time but are still under the age limit. The United States Naval Reserve as authorized by Congress in 1915 consists of citizens who have served 4 years, or more. When employed in the navy they have same status as enlisted men, but are not advanced in times of peace. Enlistments in the Naval Reserve are for 4 years, and must be made within 8 years of final discharge from navy. Class One includes those enlisting within 4 months of discharge, and Class Two, all others. Class One, with service in the navy of less than 8 years, are paid $30 per annum; with service of 8 to 12 years $60; with service of 12 years or more, $100. All of Class Two receive $12 per annum.



NAVAL INSIGNIA—OFFICERS' SLEEVE BRAIDING

1. Admiral of the Navy
2. Admiral
3. Vice-Admiral
4. Rear-Admiral
5. Commodore
6. Captain
7. Commander
8. Lieutenant-Commander
9. Lieutenant
10. Ensign
11. Lieutenant Naval Militia



NAVAL INSIGNIA FOR ENLISTED MEN

1. Chief Master-at-Arms
2. Boatswain's Mate, 1st Class
3. Gunner's Mate, 2d Class
4. Quartermaster, 3d Class

Members of Naval Reserve must serve not less than one month each year in a navy vessel.

NAVAL SCHOOLS, in addition to the regular naval schools at Newport, R. I., Norfolk, Va., Great Lakes, Ill., and San Francisco, Cal., a number of others were opened in 1917 and 1918 to train the large number of men enlisting in the

navy. Among these were the training stations at Bumkin Island, Boston Harbor, Bensonhurst, L. I., Pelham Bay Park, N. Y., Cape May, N. J., Cherrystone Island, Va., Charleston S. C. (Navy Yard). Schools were established at the navy yards in Philadelphia, Boston, San Francisco, and other important cities for intensive training of the men before they were assigned to ships.

NAVARINO (-rē'nō), or **NEOCASTRO**, officially PYLOS, a small seaport on a bay on the S. W. coast of the Morea, Greece; it has the best harbor in Greece. The ancient Pylos, the city of Nestor, stood near. The Bay of Navarino was the scene of a great sea-fight between the Athenians under Cleon and the Spartans (425 B. C.), in which the latter were defeated; and on Oct. 20, 1827, it saw the annihilation of the Turkish and Egyptian navies by the combined British, French, and Russian fleets under Sir Edward Codrington.

NAVARRE, a province and ancient kingdom of Spain, bounded on the N. by France, on the E. by Aragon, on the S. by Old Castile, and on the W. by the Basque provinces; area 6,046 square miles; pop. 304,122. The surface is generally mountainous and bleak, but in the valleys and along the river banks the soil is very fertile. The principal rivers are the Aragon, Zidacos, Arga, Ebro, and Bidassoa. Products, wheat, maize, barley, and oats. Minerals, iron, copper, and rock-salt. Principal towns: Pampeluna (capital), Tudela, Olite, and Estella. Navarre was inhabited at an early period by the Vascones, who were expelled by the Romans. It was seized by the Visigoths in 470, invaded by the Saracens early in the 8th century, and fell under the sway of Charlemagne in 778. It became an independent state in 855. In 1035 Navarre was divided into three kingdoms—Navarre, Aragon, and Castile. The first two became united in 1076, and again separated in 1134. In 1285, it became an appanage of France, but recovered its independence in 1328. Ferdinand conquered it in 1512. The estates of Navarre took the oath of allegiance to him in 1513, and it was incorporated with Castile in 1515. After this act of spoliation, there remained nothing of the ancient kingdom of Navarre beyond a small territory on the N. side of the Pryenees, which was subsequently united to the crown of France by Henri IV. of Bourbon, King of Navarre, whose mother, Jeanne d'Albret, was granddaughter of Queen Catherine; and hence the history of Navarre ends with his accession to the French throne, in 1589.

NAVE, that part of an ecclesiastical edifice to the W. of the choir, and in which the congregation assemble; the part of a church between the aisles.

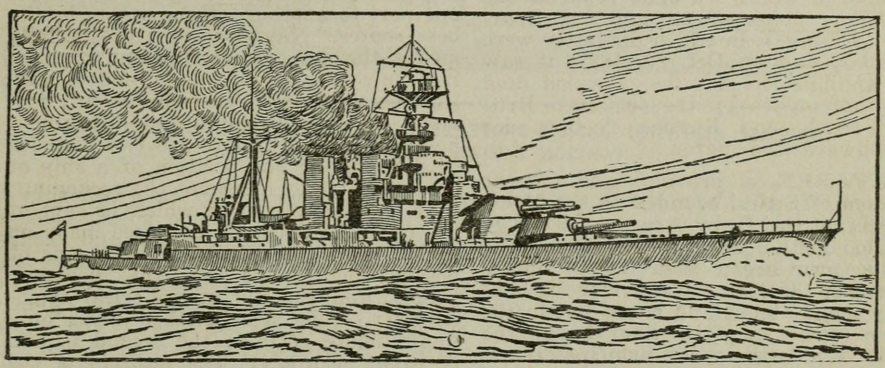
NAVEL, in anatomy, the cicatrix of the umbilicus which causes a narrow and deep impression on the surface of the abdomen; it marks where the fœtus was attached to the placenta by the umbilical cord.

In ordnance, a perforated lug on the underside of a carronade which is engaged by a through bolt and thereby secured to the carriage.

NAVIGATION, the art or science of navigating or conducting vessels from one port to another, on the ocean, by the best routes. Navigation more especially means the art of directing and measuring the course of ships, and of determining the position of the ship at any moment, and the direction and distance of her destination. There are two methods of determining the position of a ship at sea; the first by means of the reckoning; that is, from a record which is kept of the course sailed and distances made on each course; the second is by means of observations made on the heavenly bodies, and the aid of spherical trigonometry. The first method gives only approximate results; the second admits of great accuracy. The position of the vessel being known at any moment, the direction and distance of any other point may be determined either by the aid of a chart, or by the application of the principles of trigonometry. To the approximate methods of determining a ship's position it is necessary to add frequent checks by astronomical observations. The principal objects to be attained by astronomical observations are, to ascer tain the latitude, the longitude, and the variation of the needle, for correcting the dead reckoning.

NAVIGATION LAWS. Very little change has been made in the navigation laws of the United States since their adoption in 1792-1793. The main features of these laws may be summed up as follows: No vessel, unless entirely built in this country and wholly owned and officered by Americans, is considered an American vessel having the right to be protected by the American flag. No foreign vessel is permitted to engage in the American coasting trade, the same extending from Atlantic to Pacific ports. American vessels are no longer considered as such if even a part-owner (with a few exceptions) resides abroad for a short time. Transfer of an American vessel to foreigners prohibits it from

ever again sailing under the American flag. If an American vessel makes any repairs in a foreign port, duty must be paid on the value of all such repairs on her return to this country. The repairing of foreign vessels in our ports, with foreign materials, is placed under restriction. A tax of six cents per ton of their burden, called a tonnage tax, is imposed on all vessels (except fishing and pleasure vessels) engaged in trade to ports not in North or Central America and a few other specified places, the maximum aggregate tax in any one year not exceeding 30 cents. Foreign vessels pay the same tax, but if one of the officers of an American vessel is a foreigner, it is forced to pay an additional tax of 50 cents. Materials for the construction of vessels for foreign trade may be imported free of duty, but the duty must be paid if the vessel engages for more than two months a year in the coasting trade. American vessels may unload at any port of delivery in the customs district, but foreign vessels can only discharge their cargoes at a port of entry, which is a certain designated port in each customs district in the United States. Exceptions are made when they are laden with coal, salt, or similar merchandise in bulk.



BRITISH SUPER-DREADNOUGHT HOOD

NAVIGATORS' ISLANDS. See SAMOAN ISLANDS.

NAVY, THE, a term used for a country's armed force operating on water or in defense of coasts and harbors. The earliest recorded sea-fights were waged by the Egyptians against the Phœnicians, Phocæans, and Mysians, about 3000 B. C. The Phœnicians, among the greatest sea-faring people of antiquity, occupied a narrow strip of seacoast in Asia Minor. After casting off the yoke of Egyptian rule, from 1200 B. C. to 870 B. C., the Phœnicians commanded the sea, but their power waned between 870 and 650 B. C., and Carthage, a Phœnician colony, gradually surpassed the parent state in sea-power. One of the earliest recorded sea-fights was the battle of Salamis, 480 B. C., when the Greeks under Themistocles defeated the fleet of Xerxes, which marked the turning point in the last Persian invasion. A Carthaginian vessel wrecked on the coast of Italy supplied the Romans with the model for their navy. The first great naval battle of the Romans was fought 260 B. C. off the Lipari Islands when Duilius defeated a superior Carthaginian fleet under Hannibal.

The galley, the warship of the Greeks, was about 100 feet long and propelled by rowers, having an iron-sheathed prow like a beak, to pierce enemy vessels. It was surmounted by the national emblem, an owl for the Athenians, a cock for the Phœnicians and Carthaginians, and an eagle for the Romans. The galley was decked over for the fighting men who were shielded by a hide curtain, from behind which they launched arrows and javelins. There were machines for hurling stones, masses of iron, and flaming missiles. The commander directed operations from an elevated station. He commanded the soldiers, and under him were the pilot who directed the steersman; a mate who commanded the sailors, and a boatswain the rowers. A musician with voice and instrument cheered and inspired the oarsmen at their task. The vessels usually advanced in triangular formation, the admiral in the lead. After victory, the richest spoils were reserved as oblations to the gods. In the beginning of the Middle Ages, the countries bordering on the Baltic and North Seas, famous sea-rovers, began to organize navies. Tales of the sea-fights in those days are so colored by fable as to be unreliable. There exists an au-

thoritative record of a Saxon (British) sea-fight in which many vessels were engaged. In 870 A. D. Harald Haarfagr, King of Norway, fought and won a naval battle against the vessels which minor kings of his country had sent against him. Olaf Trygvasson, a grandson of Harald, with the allied powers of Denmark, Vendland, and Norwegians of the province of Viken fought a naval battle in which vessels 150 feet long were engaged. In 1014 A. D. the Danes and Saxons captured London, in the first recorded naval fight against a land force. Norse sea-power began to decline in the latter part of the 11th century, but Sigurd was successful at sea in expeditions against the Moors in Spain and the pirates of the Mediterranean. Spain strove hard for pre-eminence as a maritime nation, but was not successful, and the destruction of the Armada, 1588, was the last blow to her aspirations. The British and the Dutch long held the lead in naval warfare. Alfred the Great may be said to have founded the British navy, and Athelstane, Edwy the Fair, and Canute strengthened the sea-forces and increased the number of vessels. After the Norman conquest there was a great expansion in ships of commerce and defense. Under Henry II. and Richard the Lion-hearted, British sea-power grew in strength and efficiency. In 1340 Edward III. commanded in person at the battle of Sluys when the French lost 300 vessels. It was the first naval fight in which sails replaced oars. Henry VIII. was interested in ordnance and the building of big ships. The "Great Harry" carried 75 guns and 760 men. He was the first sovereign to appoint officers for naval warfare only. The guns and gun-carriages employed during his reign were not changed for 200 years. He founded the docks of Woolwich, Deptford, and Portsmouth. Little was accomplished by succeeding sovereigns until the reign of Elizabeth. As the modern navy developed from galley to great ship the vital questions became speed, construction, offensive armaments, and facilities for maneuvering. At first there were only two classes of vessels, the ship-of-line bearing the brunt of the offensive, and the frigate for speed. The ship-of-line, a three-decker, carried 100 or more guns, and bore the burden of battle. The frigate was employed on special missions and preyed on enemy ships. With the passing of wooden vessels, came iron and steel ships, new types were introduced and improvements in the power of the guns.

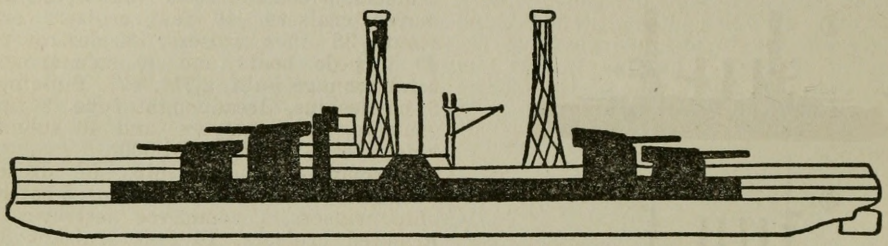


DIAGRAM SHOWING ARMOR PROTECTION ON U. S. DREADNOUGHTS. BLACK PORTION SHOWS HEAVY ARMORING

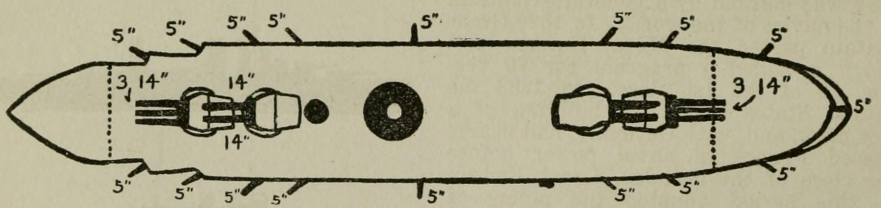
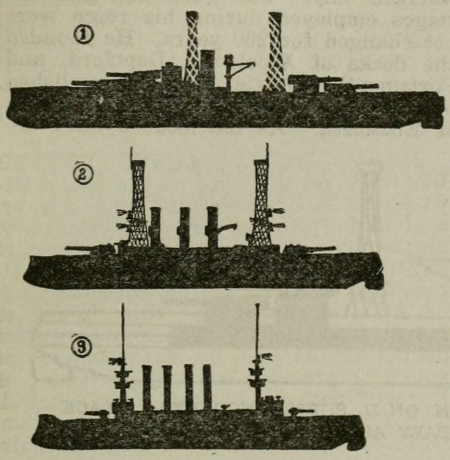


DIAGRAM SHOWING LOCATION OF GUNS ON U. S. DREADNOUGHT. CALIBER OF GUN GIVEN IN INCHES

After the Napoleonic wars Great Britain led all nations in sea-power, with France a distant second. In the second rank were Spain, Russia, and the Netherlands. Third rank, Turkey, Austria-Hungary, Denmark, Norway, Sweden, United States, Two Sicilies, Portugal, Prussia. In 1860 the United States held second place in this class. The United States navy greatly increased in tonnage during the Civil War, but afterward many ships were sold and little

was done to strengthen the navy until 1881. Germany, Italy, and Japan, developed their naval power, and in 1880 Germany stood second. Italy after the



UNITED STATES NAVY

1. Dreadnought
2. Battleship
3. Cruiser

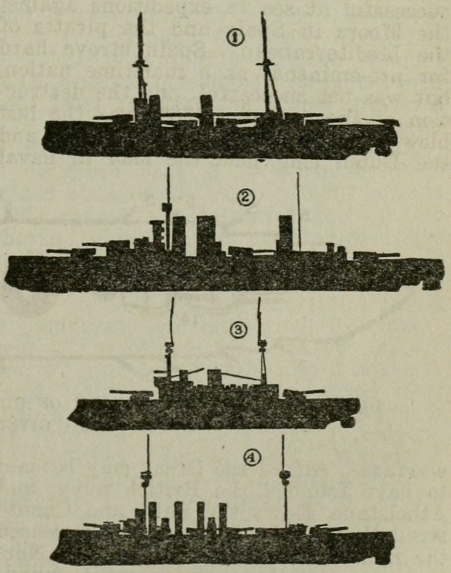
war of 1866 had risen to second place, but dropped to third in 1880. The Japanese navy began with the purchase of the Confederate ram "Stonewall" in 1866. Turkey reorganized her navy in 1863, and it had reached its highest power at the time of the war with Russia 1877-1878, but declined from that period. The decade between 1880 and 1890 was marked by a general expansion of the navies of the world. In 1889 Great Britain passed the Naval Defense Act which provided a program for 70 vessels, 10 of the 1st class. In 1882 the United States began the building of a new navy, and, with Germany, had nearly passed France in naval power before the close of the decade. Great Britain in this period adopted the policy of maintaining a navy that should equal those of any two other nations combined. Spain ordered her first battleship in 1882, Japan 2 battleships in 1893, and commenced building naval vessels on an extensive scale. Austria built her first battleship in 1899, and the Argentine Republic ordered her first cruisers in 1895. After the South African War the United States made large appropriations for the navy program, and gained the second place, but was passed by Germany in 1910. Japan rose to the fifth place after her defeat of Russia.

In July 1, 1915, the chief naval powers had built, or were building, the following war vessels: United States—10 battleships of dreadnought types, 20 older battleships, 4 coast-defense vessels, 15 armored cruisers, 3 fast cruisers and scouts, 8 other cruisers, 51 destroyers, 19 torpedo boats, 39 submarines; total tonnage built, 776,460. Vessels building: 9 battleships of dreadnought type, 17 destroyers, and 20 submarines; net tonnage, 296,380.

Great Britain—28 battleships, dreadnought type, 35 older vessels, 10 battle-cruisers, 3 coast defense vessels, 29 armored cruisers, 40 fast cruisers and scouts, 33 other cruisers, 185 destroyers, 49 torpedo boats and 90 submarines; total tonnage built, 2,310,957. Building: 9 battleships, dreadnought type, 8 fast cruisers, 25 destroyers, and 40 submarines; total tonnage, 361,300.

Germany—17 battleships of dreadnought type, 21 older battleships, 5 battleship cruisers, 1 commerce destroyer, 4 armored cruisers, 14 fast cruisers, 15 other cruisers, 139 destroyers, and 30 submarines; total tonnage 1,024,673. Building: 3 battleships of dreadnought type, 2 battleship cruisers, 6 fast cruisers, 15 destroyers, and 30 submarines; total tonnage, 208,416.

France—10 battleships of dreadnought type, 10 others, 2 fast cruisers, 17



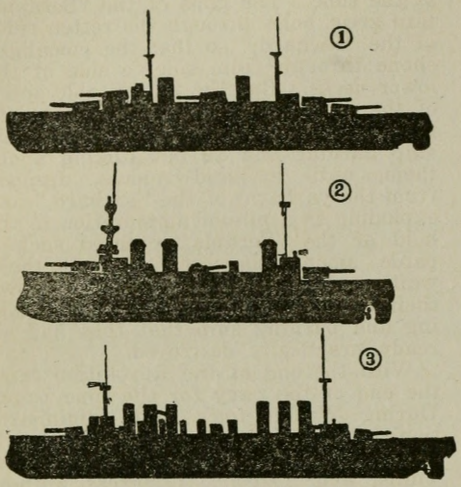
BRITISH NAVY

1. Dreadnought
2. Super-Dreadnought
3. Battleship
4. Cruiser

armored cruisers, 8 others, 87 destroyers, 132 torpedo boats, and 76 submarines; total tonnage built, 662,302. Building: 12 first-class battleships, 3 fast cruisers,

and 18 submarines; total tonnage, 349,284.

Japan—2 battleship dreadnoughts, 12 older battleships, 2 battle cruisers, 2 coast defenders, 13 armored cruisers, 6 fast



FRENCH NAVY

1. Dreadnought
2. Battleship
3. Cruiser

cruisers, 9 others, 49 destroyers, 2 torpedo boats, and 13 submarines; total tonnage, 509,913. Building: 4 battleship dreadnoughts, 2 battleship cruisers, 2 destroyers, and 2 submarines; total tonnage, 183,076.

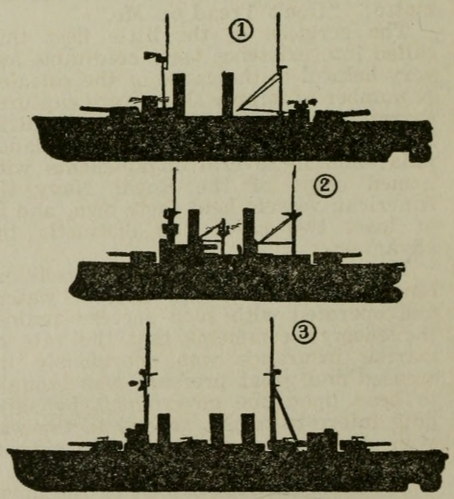
Russia—5 battle cruisers, 8 others, 5 armored cruisers, 5 fast cruisers, 2 others, 10 destroyers, 13 torpedo boats, and 35 submarines; total tonnage, 384-040. Building: 2 battleship dreadnoughts, 4 armored cruisers, 6 fast cruisers, 34 destroyers, and 14 submarines; total tonnage, 270,858.

Italy—6 battleship dreadnoughts, 8 others, 9 armored cruisers, 5 fast cruisers, 2 others, 41 destroyers, 70 torpedo boats, and 23 submarines; total tonnage, 359,487. Building: 4 dreadnoughts, 1 fast cruiser, 2 cruisers, 16 destroyers. Total tonnage, 148,655.

Austria-Hungary—4 dreadnoughts, 6 others, 6 coast defenders, 2 armored cruisers, 4 fast cruisers, 1 other, 19 destroyers, 69 torpedo boats and 16 submarines, total tonnage, 255,776. Building: 4 dreadnoughts, 3 fast cruisers, 6 destroyers, 1 torpedo boat; total tonnage, 118,270.

Following the World War the navies of the World were in a different relative position than before. The German navy had practically disappeared. In 1919 the British navy continued first with 641 ships, with a tonnage of 2,003,260. The United States was second with 206 ships, with a tonnage of 528,936. Japan was third with 98 ships, with a tonnage of 340,055. France was fourth with 131 ships, with a tonnage of 325,361. Italy was fifth with 145 ships, with a tonnage of 218,870. At the end of 1919 Great Britain had 194 ships under construction; the United States, 348; Japan, 43; France, 18; and Italy, 31.

NAVY DEPARTMENT, UNITED STATES. At the head of the Navy Department is the Secretary of the Navy, a civilian, with an Assistant Secretary, also a civilian. The military features of naval administration are in theory directed by a Naval Officer with the rank of Admiral, under the title "Chief of Naval Operations." The administrative details are handled by Bureaus, each of which is presided over by a "Chief of Bureau" with the rank of Rear-Admiral. The Bureaus are those of Navigation, Ordnance, Construction and Repair, Steam Engineering, Supply, Medicine and Surgery, and Yards and Docks. The titles of these Bureaus are in general descriptive of the matters coming under their cognizance, except in the case of the Bureau of Navigation, which as a matter of fact has nothing to do with



JAPANESE NAVY

1. Battleship
2. Cruiser
3. Dreadnought

navigation, its duties being connected exclusively with naval personnel.

NAVY LEAGUE OF THE UNITED STATES, a society founded in 1903 which according to its charter of incorporation has for its purpose "to acquire and

spread before the citizens of the United States, through branch organizations and otherwise, information as to the condition of the naval affairs and equipment, and to awaken public interest and co-operation in all matters tending to aid, improve, and develop their efficiency." At the outbreak of the war with Germany the League had a membership of 10,000. During the war Secretary Daniels of the Navy Department became angered by some of the actions of the head of the League and refused to recognize it or co-operate with it in anyway.

NAVY, UNITED STATES. In the last months of 1775, the Continental Congress passed a number of acts creating a "Marine Committee" and providing for the building and manning of a fleet of 17 small vessels carrying from 10 to 32 guns each. At the head of the list of officers commissioned was Commodore Esek Hopkins, of Rhode Island. John Paul Jones was at the head of a list of 13 lieutenants and is said to have had the honor of hoisting the first American ensign over a duly commissioned American man-of-war. The man-of-war was the "Alfred," and the ensign was the so-called "Pine-tree" flag, bearing the device of a pine-tree with a rattlesnake coiled at its roots, and the motto: "Don't Tread on Me."

The services of the little fleet thus called into existence were creditable and very helpful to the cause of the colonies. A number of supply ships were captured carrying cargoes destined for the British armies at New York and Philadelphia; and in several engagements with armed ships of the Royal Navy the American vessels held their own, and in at least two cases had distinctly the advantage.

Three of the largest of the vessels extended their cruises to British waters and operated with such success against the enemy's commerce that the rate of marine insurance was enormously increased and great pressure was brought to bear upon the government by shipping interests to put an end to the war even at a cost of granting independence to the colonies.

The most brilliant exploit of the naval war was the capture on Sept. 23, 1779, of the British frigate "Serapis" by the "Bon Homme Richard," commanded by John Paul Jones, now a commodore. The "Serapis" was a well-appointed frigate, manned by experienced British seamen. The "Bon Homme Richard" was a dilapidated merchant vessel, hastily fitted out as a man-of-war and manned by a motley crew hurriedly gathered together, strange to the ship and to each other. The ships met in the late afternoon and the engagement which ensued lasted throughout the night; the ships being lashed together for the last three hours of the time. The guns of the "Serapis" tore great holes through the rotten sides of the "Richard," so that the moonlight shone through from side to side of the lower decks. But the indomitable spirit of the commander was communicated to the crew and they fought on, with their ship burning and all but sinking under them, until a hand-grenade, dropped from the yardarm of the "Richard," and exploding in a pile of ammunition in the hold of the "Serapis," created such a panic among the crew that, without waiting for orders, they hauled down their colors and surrendered to the sinking and burning ship that they had already practically destroyed.

With the end of the Revolution came the end of the navy for the time being. During Washington's first administration, prompted by the intolerable outrages of the Barbary States (Algiers, Tunis, and Tripoli), Congress authorized the building of six frigates, for which an unexpected use was found in 1798, when what amounted to a war with France was forced by the high-handed edicts issued by Napoleon for the purpose of preventing commerce by neutrals, and especially by America, with the European enemies of France. A number of engagements took place, in all of which the Americans were successful, the most important capture made being that of the French frigate "l'Insurgante" by the "Constellation," commanded by Commodore Truxton.

In 1798 a law was passed by Congress creating a navy department, and Benjamin Stoddard, of Georgetown, D. C., was made Secretary of the Navy, with a seat in the Cabinet. Previous to this time the navy had been under the administration of the Secretary of War.

In 1801, the outrages of the Barbary States having been renewed, the navy was called upon to put an end to them and succeeded after four years of alternate fighting and diplomacy. The names of Richard Somers and Stephen Decatur are associated with especially gallant enterprises during this war. Apart from its results in putting an end to the depredations of the piratical governments, which for years had levied tribute on all commerce through the Straits of Gibraltar, the war served as a training school for the young American navy, the value of which was to be made apparent at a later date.

During the administration of Jeffer-

son, the navy received scant attention. It was even proposed to do away completely with frigates and cruisers and to rely entirely upon gunboats; looking to these—and to the navy—for harbor defense only. Fortunately this policy was only partially given effect, and the war with England which began in 1812 found still a few frigates in commission and commanded by officers who had seen service during the four years of operations against the Barbary States. At this time the British navy was counted as supreme upon the sea. The stories of Trafalgar and the Nile were fresh in the memory of the world and especially in the memory of England and English seamen. And no one dreamed that the little navy of the United States had anything but defeat to anticipate in encounters with ships officered and manned by men trained in the school of Nelson and Hood.

The tradition of British invincibility was quickly shattered. Within the first few months of the war four encounters took place between American and British ships, in every one of which the Americans were victorious. War was declared by Congress on June 18, 1812. On Aug. 19th, the "Constitution" (American) captured the "Guerriere"; on Oct. 25th, the "United States" captured the "Macedonian"; on Oct. 17th, the "Wasp" captured the "Frolic"; and on Dec. 29th, the "Constitution" captured the "Java."

The prestige of the navy resulting from this unbroken series of victories was somewhat lessened by the loss of the "Chesapeake," Captain Lawrence, in an engagement with the British frigate "Shannon," but was carried to a higher point than ever by the great and very important victories won by the squadrons of Commodore Perry on Lake Erie, and of Captain McDonough on Lake Champlain, which put an end to all danger of invasion from Canada; and by later victories on the ocean, which, although accompanied by a few defeats, continued, upon the whole, the early successes of Hull and Decatur and Bainbridge.

From the close of the war with England in 1815 to the beginning of that with Mexico in 1846, the work of the navy, while less dramatic than in time of actual war, was not less important. And the area covered by its operations was probably larger than at any other period in its history, extending from Java and Sumatra on the W. to Palestine on the E., and including explorations in both the Arctic and the Antarctic oceans. A brief résumé of the operations during this period and that between the Mexican War and the Civil War will give a better idea than could be otherwise obtained, of the widely varied activities which fall to the lot of the navy in what are sometimes called "the piping times of peace."

In 1815, following immediately upon the close of the war with England, Commodore Decatur led a formidable squadron to the Mediterranean, where the Barbary States were again committing depredations against American commerce. The expedition was eminently successful and no further trouble was experienced from that quarter.

From 1821 to 1825 a considerable force was engaged in the suppression of piracy in the West Indies. At the same time, and for many years thereafter, a small squadron was maintained on the W. coast of Africa, engaged in the suppression of the slave-trade. In 1818, an expedition to the Pacific took possession in the name of the United States of the territory about the Columbia river, now included in the States of Washington and Oregon.

From 1838 to 1842 a squadron of five ships under Commodore Wilkes was engaged in explorations in the South Seas, one of the many important results of which was the discovery of the Antarctic continent, the existence of which had been suspected but not before known with certainty.

In 1848, an expedition commanded by Lieutenant William F. Lynch, was dispatched to Palestine and spent many months in studying the topography of the regions about the Dead Sea and the Sea of Galilee, and in exploring the River Jordan. The boats required for this work, among the first metallic boats ever built, were landed on the Syrian coast and transported across the desert to Tiberias on trucks drawn by camels.

In 1850 and 1853, expeditions to the Arctic were made by ships manned by officers and men of the navy, in a search for the English explorer Sir John Franklin, who had disappeared into the Arctic regions several years before.

In 1853, Captain Matthew C. Perry commanded an expedition to Japan, until then a "Hermit Nation," which, thanks to the judicious combination by Perry of diplomacy and a show of force, resulted in throwing open the ports of Japan to intercourse with the world and started that nation on the road which, in less than half a century, was to bring it to a position of equality with the nations of the western world.

At the outbreak of the Mexican War in 1846, Commodore Sloat, commanding the naval forces in the Pacific, com-

pelled the surrender of the Mexican forces on the coast of what is now California and hoisted the United States flag over the whole of that territory. On the E. coast, a close blockade of Mexican ports was maintained; and when it was decided to make Vera Cruz a base for General Scott's advance on Mexico City, the fleet under Commodore M. C. Perry reduced the forts commanding the approaches to Vera Cruz and took possession of the harbor.

The Civil War (1861) found the navy small in numbers as regards both ships and personnel, but efficient in discipline and spirit. It was rapidly expanded, and within a few months established a blockade of the southern coasts under which the ports from the Capes of the Chesapeake to the mouth of the Rio Grande were held in a grip which never relaxed until, at the end of four years of this pressure, combined with that of the Northern armies on the land side, the Confederacy was half-starved, half-crushed, into submission. The victories of Farragut at Mobile and New Orleans may be classed among the most brilliant achievements of naval history and easily take rank with Trafalgar and the Nile.

The engagement between the "Monitor" and "Merrimac" forecast the development of modern armor-clad navies; and the sinking of the Union frigate "Hoosatonic" by a Confederate submarine was the first practical achievement in the development of submarine warfare.

From 1865 to 1882 the navy was neglected and forgotten. But by some miracle of morale, it maintained its spirit and its discipline to such a degree that when, in 1882, a small appropriation was made for the building of four ships of modern construction and armament, the officers of the navy were prepared to furnish designs for ships and guns and to take up all the problems involved, at a point fully as advanced as that of constructing and ordnance engineers abroad. These, the first ships of what is called the modern navy, were the "Chicago," "Boston," "Atlanta," and "Dolphin"—cruisers of only moderate size and power, but essentially modern in that ships and guns alike were of up-to-date construction and built throughout of steel.

In 1888 and 1889 two armored ships were built, the "Texas" and the "Maine," and these were followed in 1890-1892 by three battleships, the "Massachusetts," "Indiana," and "Oregon." Other ships followed, of various types, among them several battleships; and by 1898 the United States was easily fifth among the naval powers of the world.

On Feb. 15, 1898, the "Maine" was blown up in Havana harbor through causes which have never been explained; and out of this incident, coupled with a long train of circumstances connected with conditions of Spanish rule in Cuba, war was declared between the United States and Spain on April 25, 1898. The war was brief and decisive. On May 1st, within a month after the beginning of hostilities, Commodore Dewey steamed into Manila Bay at the head of a squadron of cruisers and gunboats, and in a few hours destroyed the Spanish squadron which he found at anchor off Cavite. Two months later, July 4th, Admiral Sampson, in command of a fleet of battleships and cruisers off Santiago de Cuba destroyed a Spanish squadron of armored cruisers which, under command of Admiral Cervera, attempted to escape from the harbor. In both of these engagements the American forces were greatly superior to those of their opponents, and victory was a matter of course; but the swift and sweeping nature of the victory in each case, and the practically complete annihilation of the enemy, showed evidence of a superiority in "morale" far exceeding the superiority in material power. At Lake Erie, Lake Champlain, and Mobile Bay, as at Manila and Santiago, every ship of the enemy was either captured or destroyed.

The prestige won at Manila and Santiago carried the navy forward from 1898 to 1917 without the period of depression which had followed all earlier wars. The building of battleships continued, and other ships—cruisers, destroyers, submarines, and auxiliaries—were added in considerable numbers.

On April 6, 1917, the United States entered the World War, at a moment when the prospects of the Allies were at the lowest ebb, owing to German victories on land and still more to the ever-increasing efficiency of the submarine warfare at sea. The naval force which the United States threw into the balance—counting only ships of modern design available for foreign service—consisted of 12 dreadnought battleships, some 25 destroyers, and 10 submarines. Back of this force and available for the defense of the Atlantic coast, were a large number of battleships, cruisers, destroyers, and submarines of old, nearly obsolete, design, all of which were utilized to the fullest extent, Congress and the Navy Department, awakened at last to the fact that the United States was not immune from war, making haste to supply the deficiencies in the naval es-

tablishment that should have been supplied many years before. In little more than a month after the declaration of war, a small flotilla of destroyers went abroad and at once took up the task of convoying supply ships and transports through the zone of submarine activity. Other destroyers were sent as rapidly as they could be made ready.

A new type of small, fast, handy craft known as "submarine chasers" was developed and began operations in waters near the coasts of England, France, and Italy. Two divisions of battleships joined the British Grand Fleet. A great number of transports and supply ships were bought, commandeered, and built, manned and officered, by the rapidly expanding personnel of the navy, and enlisted in the work of carrying troops and supplies to European ports under the escort and protection of destroyers and cruisers of the United States navy. The Germans boasted that not a single American soldier would ever live to set foot on European soil, but under the protection of the navy, and under its direction, two million men were transported without the loss of a man. This was the great achievement of the war, in which the army and navy co-operated so perfectly that in little more than a year after the United States entered the war three hundred thousand men were landed in Europe monthly. It may be too much to say that America won the war. But without the American army, the war would have been lost. And the American navy "put the army across."

The United States, which, up to about 1890, was almost negligible as a naval power, and as recently as 1914 was contending with Germany for third place among the naval powers of the world, is now little, if at all, inferior to Great Britain, which, until the beginning of the World War, was the leading naval power of the world by a margin so wide that neither Germany nor any other nation thought of disputing its primacy. The development which has carried the United States to the position it now occupies has come about very largely since April, 1917. When the World War began, in 1914, the United States navy was somewhat superior to that of Germany in the number and power of its battleships, but distinctly inferior in every other respect. It included no battle cruisers or scout cruisers, and the cruisers that it did include were out of date. The destroyers were few and small, and the submarines were in the experimental stage. In 1915, 1916, 1917, and 1918, Congress authorized the construction of battleships, battle cruisers, scout cruisers, destroyers, and submarines, all to be of maximum size and power, and a considerable number of auxiliaries, including fuel ships, ammunition ships, repair ships, and hospital ships, all of which types are little less important for an efficient navy than the fighting ships themselves.

The following are the vessels included in the building program authorized in appropriations of the years named. They constitute in themselves a navy more powerful than any that existed in 1914:

BATTLESHIPS

Name	Date authorized	Displacement (tons)	Length (ft.)	Speed (knots)	Main Battery
Idaho	1914	32,000	600	21	12 14-inch guns
Mississippi	1914	"	"	"	" " " "
California	1915	"	"	"	" " " "
Tennessee	1915	"	"	"	" " " "
Colorado	1916	"	"	"	" " " "
Maryland	1916	"	"	"	" " " "
Washington	1916	"	"	"	" " " "
Indiana	1917	43,200	660	23	12 16-inch guns
Montana	1917	"	"	"	" " " "
South Dakota	1917	"	"	"	" " " "
Iowa	1918	"	"	"	" " " "
Massachusetts	1918	"	"	"	" " " "
North Carolina	1918	"	"	"	" " " "

BATTLE CRUISERS

Name	Date authorized	Displacement (tons)	Length (ft.)	Speed (knots)	Main Battery
Constellation	1916	43,500	850	33¼	8 16-inch guns
Lexington	1916	"	"	"	" " " "
Ranger	1916	"	"	"	" " " "
Saratoga	1916	"	"	"	" " " "
Constitution	1917	"	"	"	" " " "
United States	1918	"	"	"	" " " "

SCOUT CRUISERS

Name	Date authorized	Displacement (tons)	Length (ft.)	Speed (knots)	Main Battery
Name not yet assigned. .	1916	7,100	550	35	8 6-inch guns
	1916	"	"	"	" " " "
	1916	"	"	"	" " " "
	1916	"	"	"	" " " "
	1917	"	"	"	" " " "
	1917	"	"	"	" " " "
	1917	"	"	"	" " " "
	1918	"	"	"	" " " "
	1918	"	"	"	" " " "
	1918	"	"	"	" " " "

DESTROYERS

320 of these authorized since 1914, with the following characteristics:

Displacement (tons)	Length (ft.)	Speed (knots)	Torpedoes	Guns
1,200 to 1,300	314	35*	12 tubes 24 torpedoes	4 4-inch

*Estimated speed. Actual speed on trial has in some cases exceeded 40 knots.

SUBMARINES

120 of these. Details confidential.

AUXILIARIES

Fuel ships, supply ships, repair ships, hospital ships, ammunition ships, mine-layers, mine-sweepers, tenders to destroyers and submarines. Total, 23.

Including the preceding list of new vessels and all of the earlier types that are entitled to be counted as available fighting ships for the decade 1920-1930, the total strength of the United States navy will be in 1923:

Battleships	29
Battle cruisers	6
Scout cruisers	10
Light cruisers	0
Destroyers	350
Submarines	140
Auxiliaries	30

The fighting ships of the above list are more heavily armed than corresponding ships of any other navy in the world, following a precedent which goes back to the very earliest days of American naval design, in which the leading aim has always been to secure a superiority in gun-fire as compared with any possible enemy, and this even at the sacrifice, if necessary, of defensive power. The principle involved is that expressed in the maxim, "The best defense is a vigorous offense." The victories of the "Constitution" and other American frigates in 1812 were attributed by the British to the fact that the American vessels were more heavily armed than the British ships of corresponding class. This was urged almost as a reproach, whereas it was, in fact, an evidence of far-sightedness for which as much praise should be given as for the gallantry and skill with which the ships and guns were handled.

The commissioned officers of the navy are classified as follows:

Officers of the "Line."
Officers of the Medical Corps.
Officers of the Supply Corps.
Officers of the Construction Corps.
Officers of the Civil Engineer Corps.
Chaplains.
Professors of Mathematics.

Officers of the Line command ships, squadrons, and fleets.

The duties of the other groups are sufficiently indicated by their titles. The numbers of the various groups as prescribed by law are as follows:

Grades	Line	Medical Corps	Supply Corps	Construction Corps	Civil Engineer Corps	Chaplains	Professors
*Rear Admirals	69	6	4	2	2	—	—
Captains	239	47	26	22	6	13	5
Commanders	410	91	52	37	15	1	4
Lieutenant-Commanders	777	78	100	19	14	2	3
Lieutenants	1,764	696	251	159	54	2	1
Lieutenants Junior Grade	891	—	202	43	—	56	10
Ensigns	1,230	—	98	—	—	—	—

* A rear-admiral, while actually serving as chief of naval operations, or as commander-in-chief of a fleet, has the temporary rank of *admiral;* and while serving as second in command of a fleet, the temporary rank of *vice-admiral.*

In addition to the above, there are approximately 2,000 midshipmen under training for officers at the Naval Academy.

Subordinate to the grades of the above list, but holding commissions, are the grades of chief boatswain, chief gunner, chief machinist, chief carpenter, chief sailmaker, and chief pay clerk.

Warrant officers are officers of the navy occupying a plane intermediate between the commissioned officers and the enlisted men. As a rule they have been promoted from the ranks of enlisted men and they are eligible for advancement to the grades of chief boatswain, chief gunner, etc., and thereafter to ensign, and so on upward through all the commissioned grades to that of rear-admiral. The warrant grades are: Boatswain, gunner, machinist, carpenter, sailmaker, and pay clerk.

The enlisted personnel authorized by the law of 1919 consists of 143,396 men of all grades. The democratic character of the United States navy is illustrated by the fact that any one of these men may hope to attain the highest rank in the service.

NAVY YARDS AND NAVAL STATIONS, UNITED STATES, are located at Portsmouth, N. H., Boston, Mass., Newport, R. I., New London, Conn., Brooklyn, N. Y., Philadelphia, Pa., Norfolk, Va., Charleston, S. C., Key West, Fla., Pensacola, Fla., New Orleans, La., Panama Canal Zone, San Diego, Cal., San Francisco, Cal., Mare Island, Cal., Bremerton, Wash., Pearl Harbor, Hawaii, Cavite and Olongapo, Philippine Islands, and Guantanamo, Cuba.

The largest and most important of these stations are those at New York and Norfolk. At Newport is the Torpedo Station, where Torpedoes are manufactured and tested and new developments tried out. The station at New London is a base and training school for submarines and that at Pensacola a base and training school for aviation. Ship-building is carried on on a large scale at Brooklyn, Philadelphia, Norfolk, and Mare Island, and on a small scale at Portsmouth, N. H. Elaborate and well-equipped establishments for the training of recruits are maintained at Newport, Lake Forrest, (Great Lakes Training Station), and San Francisco. The educational facilities at these and other shore stations, as well as on shipboard, are remarkably complete and justify the boast of the Navy that it offers technical courses in a wide diversity of branches equal, if not superior, from a practical point of view, to those offered by any university in the country.

NAWANAGAR, one of the Bombay states of India. It has an area of 3,791 square miles. Pop. about 350,000.

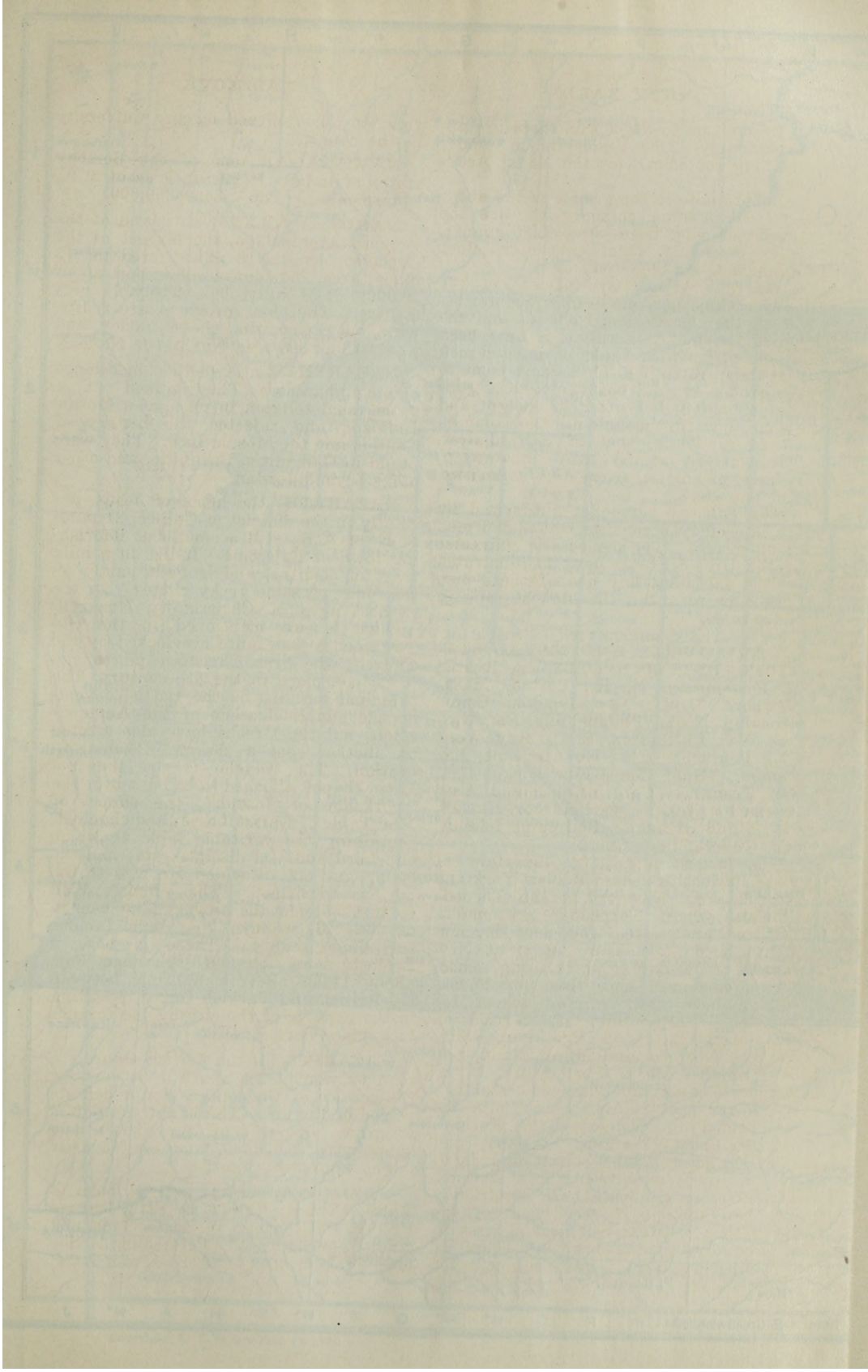
NAXOS, or **NAXIA**, an island of the Grecian Archipelago, the largest of the Cyclades; length 18 miles; breadth, 12 miles; area, 164 square miles; pop. about 15,000. It is hilly, but extremely productive. The chief products are fruits, wine, oil, cotton, silk, cheese, honey, and wax. Chief town is Naxia (or Naxos).

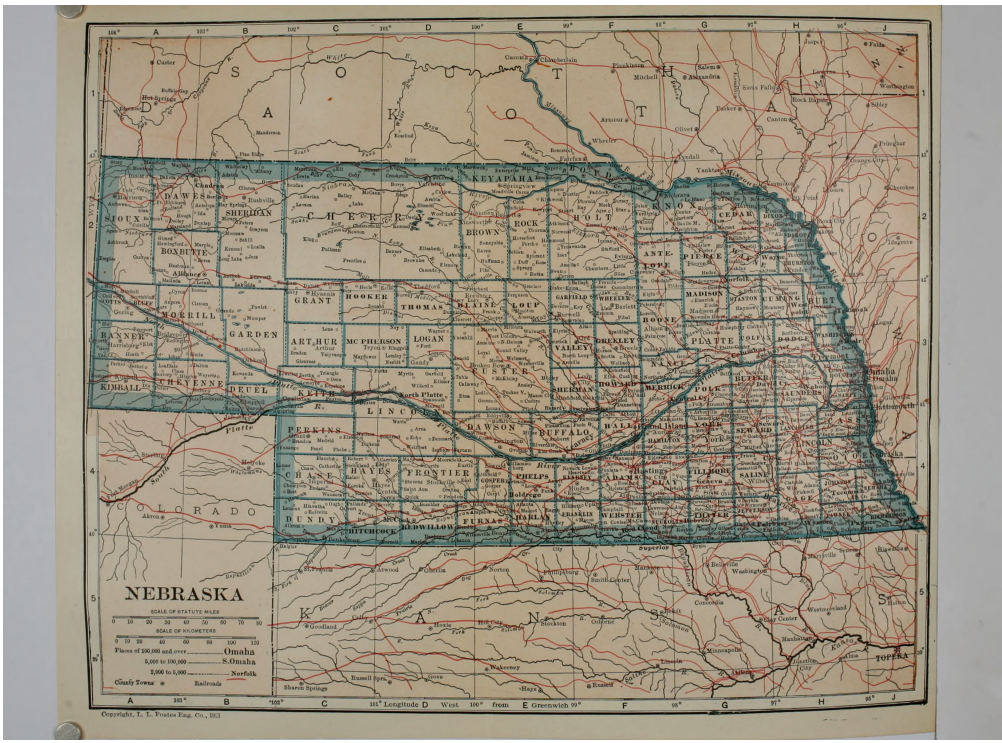
NAZARENES, a Jewish sect mentioned by Epiphanius. They aimed at a patriarchal religion in place of a Mosaic Judaism, and rejected the history of Genesis and the Mosaic Law. They were found in Galaaditis, Basanitis, and other parts beyond Jordan.

NAZARETH, the home of Jesus, anciently in the district of Galilee, 21 miles S. E. of Acre, still a small but flourishing town of Palestine. It lies in a hilly tract of country, and is built partly on the sides of some rocky ridges. In the earliest ages of Christianity Nazareth (which is not mentioned in the Old Testament) was quite overlooked by the Church; the first Christian pilgrimage to it took place in the 6th century. The principal building is the Latin convent, on the supposed scene of the Annunciation; but the Greeks have also erected on another spot a church in commemoration. The traveler is also shown a Latin chapel, affirmed to be built over the "workshop of Joseph"; the chapel of "the Table of Christ," a vaulted chamber, containing the veritable table at which our Lord and His disciples ate; and the synagogue out of which He was thrust by His townsmen. The Virgin's Well is just outside the town. The women of the village have long been famous for their beauty. There is here a Protestant mission and orphanage. Pop. about 11,000. Severe fighting between the British and Turkish forces, resulting in the capture of the city by the former, took place here in 1917.

NAZARITE, in the Jewish Church, a man or woman set apart by a vow for the service of God, either for a definite period or for life. The hair was allowed to grow, the fruit of the vine in any shape was forbidden, and no Nazarite might approach a corpse.

NAZIMOVA, ALLA, actress, born in Yalta, Crimea, Russia, in 1879, learned French and German in Switzerland and studied music in St. Petersburg. She played at Moscow and St. Petersburg,




NEBRASKA
SCALE OF STATUTE MILES
0 10 20 30 40 50 60 70 80
SCALE OF KILOMETERS
0 10 20 40 60 80 100 120
Places of 100,000 and over ..... Omaha
5,000 to 100,000 ..... S.Omaha
2,000 to 5,000 ..... Norfolk
County Towns ⊛ Railroads
SOUTH DAKOTA
IOWA
KANSAS
COLORADO
WYOMING
DAWES
SHERIDAN
SIOUX
BOX BUTTE
CHERRY
KEYA PAHA
ROCK
BROWN
HOLT
KNOX
CEDAR
DIXON
DAKOTA
DUNDAS
ANTELOPE
PIERCE
MADISON
STANTON
WAYNE
GRANT
HOOKER
THOMAS
BLAINE
LOUP
GARFIELD
WHEELER
BOONE
PLATTE
COLFAX
BANNER
MORRILL
GARDEN
ARTHUR
MC PHERSON
LOGAN
VALLEY
GREELEY
NANCE
KIMBALL
CHEYENNE
DEUEL
KEITH
CUSTER
SHERMAN
HOWARD
MERRICK
POLK
BUTLER
SAUNDERS
CASS
PERKINS
LINCOLN
DAWSON
BUFFALO
HALL
HAMILTON
YORK
SEWARD
CHASE
HAYES
FRONTIER
GOSPER
PHELPS
KEARNEY
ADAMS
CLAY
FILLMORE
SALINE
JEFFERSON
GAGE
HITCHCOCK
RED WILLOW
FURNAS
HARLAN
FRANKLIN
WEBSTER
NUCKOLLS
THAYER
JOHNSON
NEMAHA
OTOE
LANCASTER
SARPY
DOUGLAS
Omaha
Lincoln
North Platte
Platte R.
Republican R.
Missouri R.
Niobrara R.
Loup R.
Elkhorn R.
Big Blue R.
Nemaha R.
Little Blue R.
Republican City
Superior
Hastings
Grand Island
Kearney
Holdrege
McCook
Alliance
Chadron
Crawford
Gordon
Valentine
Ainsworth
Bassett
Long Pine
Rushville
Harrison
Hemingford
Gering
Scottsbluff
Bridgeport
Sidney
Kimball
Chappell
Big Springs
Julesburg
Ogallala
Paxton
Sutherland
Oshkosh
Lewellen
Broadwater
Wauneta
Imperial
Grant
Hyannis
Arthur
Oconto
Callaway
Arnold
Broken Bow
Ansley
Litchfield
Loup City
Ord
Burwell
Greeley
Scotia
Wolbach
Cairo
Grand Island
Central City
Fullerton
Genoa
Columbus
Schuyler
David City
Seward
York
Milford
Crete
Beatrice
Fairbury
Hebron
Superior
Nelson
Fairfield
Clay Center
Sutton
Geneva
Fremont
Blair
Tekamah
Decatur
Lyons
Oakland
Wisner
Pilger
Stanton
Norfolk
Madison
Battle Creek
Pierce
Plainview
Wayne
Wakefield
Laurel
Hartington
Coleridge
Randolph
Crofton
Niobrara
Verdigre
Creighton
Pender
Bancroft
Tilden
Neligh
Oakdale
Elgin
Clearwater
Orchard
Albion
Petersburg
Cedar Rapids
Spalding
Greeley Center
Boelus
Scotia
Ericson
Burwell
Taylor
Loup City
Arcadia
Wolbach
Cairo
Ravenna
Kearney
Minden
Holdrege
Funk
Axtell
Bertrand
Oxford
Cambridge
Indianola
McCook
Red Willow
Culbertson
Trenton
Stratton
Benkelman
Haigler
Arapahoe
Cambridge
Bartley
Curtis
Maywood
Hayes Center
Hamlet
Palisade
Hendley
Wauneta
Imperial
Chase
Enders
Champion
Venango
Grant
Hyannis
Whitman

and visited London and New York in 1905, playing in Russian in "The Chosen People." In 1906 began to play in English in "Hedda Gabler," "A Doll's House," "War Brides," and other plays. In recent years has been seen chiefly in moving pictures.

NEAGH (nā'äh), **LOUGH**, the largest lake of the British Islands, in the province of Ulster, Ireland, surrounded by the counties of Armagh, Tyrone, Londonderry, Antrim, and Down; length 16 miles; average breadth, 10 miles. It receives the waters of numerous streams, of which the principal are the Upper Bann, the Blackwater, and the Callan; and its surplus waters are carried off N. to the North Channel by the Lower Bann. Communication by means of canals subsists between the Lough and Belfast, Newry, and the Tyrone coalfield.

NEAL, JOHN, an American poet and author; born in Falmouth, Mass., now Portland, Me., Aug. 25, 1793. He was a member of the Society of Friends, but left it at 25. Later in life he figured as editor, lecturer, lawyer, poet, novelist, and teacher of gymnastics. Among his numerous works are: "Keep Cool" (1817), a novel; "The Battle of Niagara" (1818), a poem; "Brother Jonathan" (1825); "Rachel Dyer" (1828), a novel; "Downeasters" (1833), a novel; "Wandering Recollections of a Somewhat Busy Life" (1870). He died in Falmouth, Mass., June 21, 1876.

NEANDERTHAL (-täl), a wildly romantic valley between Düsseldorf and Elberfeld in Rhenish Prussia. In a limestone cave in this valley was found in 1857 the skeleton of a prehistoric man, and the peculiar formation of the skull induced anthropologists to regard it as typical of a separate race of ancient cave dwellers.

NEAP TIDES, those tides which happen in the middle of the second and fourth quarters of the moon, taking place about four or five days before the new and full moons. They occur when the attractions of the sun and moon act on the waters of the ocean at right angles to each other.

NEARCHUS, an officer of Alexander the Great; a native of Crete, who settled in Amphipolis during the reign of Philip, and became the companion and friend of the young Prince Alexander. In 330 he was governor of Lycia and other provinces in Asia Minor. In 329 B. C. he joined Alexander in Bactria with a body of Greek mercenaries, taking part in the Indian campaigns. Having built a fleet on the Hydaspes, Alexander gave Nearchus the command of it. He left the Indus toward the end of November, 325, and, skirting the coast all the way, arrived at Susa, in Persia, in February, 324. His own narrative of his voyage has been preserved in the "Indica" of Arrian.

NEATH, a parliamentary and municipal borough and river-port of Glamorgan, south Wales, on a navigable river of the same name, 8 miles E. N. E. of Swansea. It is believed to stand on the site of the Roman station Nidum; and near it are the remains of an ancient castle, burned in 1231, and ruins of Neath Abbey. There are at Neath, which is one of the Swansea boroughs, extensive copper and tin-plate works and iron foundries, and chemicals are manufactured. Pop. about 18,000.

NEBO, a mountain of Moab, whence Moses had a view of the Promised Land, and where he died. It is a summit of the range Abarium, "over against Jericho." Seetzen, Burckhardt, etc., identify it with Mount Attarus, about 10 miles N. of the Arnon. Travelers do not observe any very prominent summit in the range immediately opposite Jericho; but it has not yet been fully explored. In Babylonian mythology, an idol which probably represented the planet Mercury. It was also worshipped by the ancient Arabians.

NEBRASKA, a State in the North Central Division of the North American Union; bounded by South Dakota, Iowa, Missouri, Kansas, Colorado, and Wyoming; admitted to the Union, March 1, 1867; capital, Lincoln; number of counties, 93; area, 76,840 square miles; pop. (1890) 1,058,910; (1900) 1,068,539; (1910), 1,192,214; (1920) 1,296,372.

Topography.—The State is situated in the great central plain of North America, and has a flat or undulating surface, with a slight inclination S. E. On the N. W. is an extensive desolate tract of land known as the Mauvaises Terres or Bad Lands, rich in interesting fossil remains. Timber has been extensively planted here of late. The principal rivers are the Missouri, which forms the boundary on the E.; its great affluent, the Nebraska or Platte, which, formed by two main forks, from the Rocky Mountains, traverses the territory in an easterly direction; and the Republican Fork of Kansas river, traversing the southern part of the State.

Geology.—The greater part of the State is occupied by Miocene Tertiary formations. A small portion of the

N. W. is of Pliocene Tertiary deposit, the remainder of the State being divided among the Permian, Carboniferous, and Cretaceous. The Missouri and Platte river valleys exhibit signs of glacial action. The mineral deposits are not extensive. Coal occurs in places in layers ranging from 5 to 22 inches. Building stones are quarried in places, including a yellowish gray limestone, a magnesium limestone, capable of taking a high polish, and the blue Trenton limestone. Lignite, marble, lime, gypsum, rock salt, and peat are found in limited quantities.

Mineral Production.—The only mineral products of the State are clay products and pottery.

Soil.—The soil, excepting in the N. W., is a deep, rich loam underlaid by a porous clayey subsoil, and is admirably adapted to withstand drought. The climate is equable, and on the whole fine. The forest trees include elm, maple, black walnut, hickory, red cedar, linden, cottonwood, hackberry, pine, and spruce. Considerable attention is paid to forestry. The principal growth of timber, cottonwood, is found along the river banks.

Agriculture.—The even temperature, fertile soil, and extensive farm area, make Nebraska an important agricultural State. The principal farm products in 1919 were as follows: corn, 184,186,000 bushels, valued at $224,707,000; oats, 69,962,000 bushels, valued at $45,475,000; wheat, 60,675,000 bushels, valued at $122,564,000; hay, 4,299,000 tons, valued at $60,186,000; potatoes, 6,325,000 bushels, valued at $12,018,000.

Manufactures.—The statistics of the manufactures of the State in 1914 are as follows; number of establishments, 2,294; average number of wage earners, 25,144; capital invested, $121,008,000; amount paid in wages, $16,893,000; value of materials used, $194,114,000; value of finished products, $221,616,000.

Transportation.—The total railway mileage of the State for 1920 was 8,392. Little railway construction has been done in recent years. The railways having the longest mileage are the Chicago, Burlington and Quincy, the Union Pacific, and the Chicago and Northwestern.

Banking.—On Oct. 31, 1919, there were 190 National banks in operation, having $16,640,000 in capital, $10,766,813 in outstanding circulation, and $9,673,520 in United States bonds. There were also 957 State banks with $23,334,000 in capital, and $6,885,000 in surplus. The exchanges at the United States clearing house at Omaha, for the year ending Sept. 30, 1919, aggregated $2,965,754,000, an increase over the preceding year of $273,280,000.

Education.—The total number of children of school age was 387,394. There were enrolled in the public schools 292,362 pupils with an average daily attendance of 219,246. There were 12,697 teachers with an average salary of $64.75 monthly. There are normal schools at Peru, Kearney, Wayne and Chadron. The University of Nebraska at Lincoln is part of the educational system of the State. Other institutions of collegiate rank are Bellevue College at Bellevue, Union College at College View, Doane College at Crete, Hastings College at Hastings, University of Omaha at Omaha, Nebraska-Wesleyan College at University Place, Cotner University at Bethany, and York College at York.

Charities and Corrections.—The charitable and correctional institutions include State institutions for the blind and deaf, an institute for the feeble-minded, industrial schools for girls and boys, three asylums for the insane, and a State penitentiary at Lincoln. There is a juvenile court law and a board of control for dependent and neglected children.

Churches.—The strongest denominations in the State are the Roman Catholic; Methodist Episcopal; Lutheran; Synodical Conference; Presbyterian, North; Regular Baptist, North; Congregational; Disciples of Christ; Lutheran, General Council; and United Brethren.

Finances.—The State has no bonded debt. The total receipts for the fiscal year of 1918 was $4,980,973 and the disbursements amounted to $4,012,270. There was a balance at the end of the year amounting to $1,451,880.

State Government.—The governor is elected for a term of two years and receives a salary of $2,500 per annum. Legislative sessions are held biennially in odd years, beginning on the first Tuesday in January and are limited to 90 days each. The Legislature has 33 members in the Senate and 100 in the House. There are 6 representatives in Congress. The State government in 1920 was Republican.

History.—Nebraska was originally a part of the Louisiana Purchase, and was for a long time part of the Northwest Territory. The overland emigration to California in 1849 brought about a general settlement of this region, and a Territory was organized in 1854 under the Kansas-Nebraska Bill. From the area of this Territory were taken part of Colorado, Montana, Wyoming, and the Dakotas. In 1867 the Union Pacific railroad was completed across Nebraska, the Territory was admitted to the Union as a State, and the capital was removed from Omaha to Lincoln.

NEBRASKA CITY, a city and county-seat of Otoe co., Neb.; on the Missouri river and on the Burlington Route and the Missouri Pacific railroads; 60 miles E. by S. of Lincoln. Here are the State Institution for the Blind, a United States government building, public library, St. Bernard's Academy, high school, waterworks, street railroad, electric lights, several daily and weekly newspapers, and banks. The city has extensive stock yards, lumber and planing mills, cereal and flour mills, starch factory, foundry, plow factories, a meat-packing plant and brickyards. Pop. (1910) 5,488; (1920) 6,279.

NEBRASKA, UNIVERSITY OF, a coeducational institution, founded at Lincoln, Neb., in 1869. There were in 1919 5,529 students with 200 teachers. The endowment fund amounted to $809,000,000 and the value of grounds and buildings to $4,500,000. There are 145,000 volumes in the library. The total income amounted to approximately $2,280,000. The president is Samuel Avery, Ph. D.

NEBRASKA WESLEYAN UNIVERSITY, a coeducational institution in University Place, Neb.; founded in 1887 under the auspices of the Methodist Episcopal Church; reported at the close of 1919: Professors and instructors, 45; students, 853; volumes in the library, 4,500; productive funds, $10,000; grounds and buildings valued at $150,000; benefactions, $1,579; income, $13,227; number of graduates, 895; president, I. B. Schreckengast, D. D.

NEBUCHADNEZZAR, or **NABOPOLASSAR**, a king of Babylon, who reigned from 626 to 605 B. C. He united with Astyages in the conquest of Syria, and founded the second Syrio-Babylonian empire.

NEBUCHADNEZZAR, or **NEBUCHADREZZAR**, surnamed THE GREAT, a king of Babylon, the son and successor of the preceding. He immediately entered on a war, by which he extended his empire over the greater part of Asia, and from the Caucasian Mountains in the N. to the Great Desert of Africa in the S. He defeated the Edomites and Ammonites, took Jerusalem, and led the inhabitants captive to Babylon. His vassal king of Judah, Jehoiakim, having revolted, he 13 years later deposed him, and put an end to the kingdom of Judah. He next turned his arms against Tyre, which after an obstinate resistance of more than 12 years, he finally took, and which, with Egypt and Persia, made his empire and power enormous. The celebrated hanging gardens of Babylon, one of the seven wonders of the world, were executed by this monarch, to please his beautiful wife, a Median princess. He died 562 B. C.

NEBULA, plural **NEBULÆ**, in astronomy, a slight cloudy patch of light, retaining its form unchanged except under keen and long-continued observation. More than 8,000 nebulæ, or star-clusters, closely resembling them, have been found in both hemispheres, and in nearly every constellation. A few, as the great nebulæ of Orion, Argo Navis, and Andromeda, are visible on very clear nights to the naked eye; the rest are telescopic. When greatly magnified some are found to be composed of many thousand remote stars, others remain only as diffused masses of light.

The great nebula of Orion surrounds a multiple star, Theta Orionis, consisting of six, apparently revolving round their common center of gravity. It has been found to alter its form very slightly. The spectroscope has shown that many of the nebulæ are merely gaseous. The nebulæ in Andromeda has a bright ball in the center and is spindle-shaped. In pathology, a slight speck on the cornea; also a mist or cloud suspended in the urine.

NEBULAR HYPOTHESIS, in astronomy, a hypothesis first suggested by Sir William Herschel, though the germs of it may be found in Kant's "General Natural History and Theory of the Heavens," printed in 1755. It was developed by La Place, with whose name it came to be associated. The hypothesis assumes that originally all suns were in a nebulous or ultra-gaseous state. The nebulous matter from which they were originally formed was at first scattered pretty uniformly through all space, but ultimately began to gravitate toward certain centers. Further contraction producing increased velocity, ring after ring would be cast off, till the central body or sun generated a whole system of planets revolving around it. They, in turn, might in the same way produce satellites. La Place believed that the sun thus produced our earth and the other attendant planets. On this hypothesis the rings of Saturn were produced by Saturn himself, and have remained in the annular form instead of condensing into nearly spherical satellites. Many people supposed that the resolution of various nebulæ into stars (see NEBULA) was necessarily fatal to the nebular hypothesis, but the discovery that some are not only irresolva-

ble, but can be actually proved by spectrum analysis to consist of glowing gas, has re-established it on a firmer basis than ever, though the original theory may need revision in points of detail.

NECHES, a river of eastern Texas. It rises in Van Zandt co. and flows in a S. E. direction into Sabine Lake. It is about 350 miles in length.

NECHO (nē'kō), King of Egypt, called in Scripture Pharaoh-Necho. He succeeded his father Psammetichus in 617 B. C. He planned a canal from the Nile to the Arabian Gulf, which undertaking he was forced to abandon, after losing a great number of men. This monarch invaded Assyria, and, on his march, was attacked by Josiah, King of Judah, who was slain in the battle. Necho was in turn defeated by Nebuchadnezzar, and obliged to return to his own country, where he died in 601 B. C.

NECKAR, one of the largest tributaries of the Rhine, and the principal river of Württemberg, rising on the E. declivity of the Black Forest, near the village of Schwenningen. It has a winding course of 250 miles, and joins the Rhine at Mannheim—the other towns on its banks being Tübingen, Heilbronn, and Heidelberg. From Cannstadt, about midway in its course, the Neckar is navigable. Fair wines are grown on its banks.

NECKER, JACQUES, a French statesman; born in Geneva, Switzerland, Sept. 30, 1732. He went to Paris at an early age, obtained employment in a banking house, in which he rose to a partnership, and in 13 years, having made a number of successful speculations, retired from business with a large fortune. The Revolution, which all his efforts were unable to check, obliged him to retire to Switzerland. Necker wrote three volumes on the finances of France, a book on the influence of religious opinions, and other works. He married the daughter of a Protestant clergyman, by whom he had a daughter, Madame de Staël-Holstein, the wife of the Swedish ambassador. She afterward became celebrated by the name of Madame de Staël. He died in Coppet, Switzerland, April 9, 1804.

NECROMANCY, the divination of the future by questioning the dead. This superstition originated in the East, and is of the highest antiquity. Mention is made of necromancy in the Scriptures, where it is strongly condemned. In the "Odyssey" Homer has made Ulysses raise the shade of Tiresias from the infernal regions. See SPIRITUALISM.

NECROPOLIS, a Greek term, meaning "the city of the dead," and applied to the cemeteries in the vicinity of ancient cities. It occurs in classical antiquity only as applied to a suburb of Alexandria, lying to the W. of that city, where the corpses were received and embalmed. Here Cleopatra applied the asp to her breast.

NECROSIS, a word used as synonymous with mortification or gangrene; but it is more commonly used in surgery to denote the death or mortification of a part or the whole of a bone. Necrosis differs from caries of a bone, inasmuch as in the latter case the vitality of the bone is only impaired, not destroyed, as in the former; in the same way as ulceration of the soft parts differs from gangrene. Necrosis is found in either sex, and at all periods of life, and may be occasioned either by external causes, as fractures, contusions, etc., or by internal or constitutional causes, as a debilitated or deranged habit of body. When a portion of a bone becomes dead, it is regarded as an extraneous substance.

NECTAR, in Greek mythology, the supposed drink of the gods. It was believed that this nectar, which they never gave to mortals, contributed much toward their eternal existence.

NECTARINE, a fruit which differs from the peach only in having a smoother rind and firmer pulp, being indeed a mere variety of peach.

NEEDHAM, a town of Massachusetts in Norfolk co., about 10 miles S. W. of Boston. It is situated on the New York, New Haven and Hartford railroad. It contains a town hall and public library. Its chief industry is knit goods. Pop. (1910) 5,026; (1920) 7,012.

NEEDLE, a small instrument of steel pointed at one end, and having an eye or hole in it through which is passed a thread, used for sewing. The early-made needles were all square-eyed.

Special kinds of needles are required for sewing canvas, for upholstering, in surgical operations, etc. Knitting needles are slender straight rods with rounded ends, and are used in pairs or sets of four or five. They vary in length and are made of wood, bone, or ivory, but chiefly of steel. Crochet needles have a hook at one end. Some needles are used in machinery. They are made of steel and are used for hosiery and stockinet work. Sewing-machine needles have a hook, eye, or barb at the pointed end, and are used with a single thread in making a single loop stitch both with

eye and with barb. The best known sewing-machine needle is the one with the eye at the pointed end, having a long groove on one side and a short groove on the opposite. The needle used on leather is the wax-thread needle, and includes many shapes. Instead of an eye these needles are formed with hooks by which the thread is pulled through a hole made by an awl. The welting needle is a section of a circle in shape, used for putting welts on boots and shoes.

NEEDLES, THE, a cluster of insulated chalk rocks in the English Channel, off the W. extremity of the Isle of Wight. They owe their name to their pyramidal and pointed shape. The Needles Lighthouse, on the most W. of the group, has an occulting light 80 feet above high-water, visible for 14 miles.

NEELY, THOMAS BENJAMIN, Bishop of the Methodist Episcopal Church; born in 1841 at Philadelphia. Entered the ministry of the Methodist Church in 1865 in the Philadelphia Conference. In 1900 he was elected Corresponding Secretary of the Sunday School Union and Tract Society and in 1904 was elected bishop. His episcopal home for the years 1904-1908 was in Buenos Aires where he had charge of the work of the Methodist Church in South America. He was retired from active service in May, 1912. Author of numerous works on Methodist law and doctrine.

NEENAH, a city in Winnebago co., Wis., on the Fox river, and on the Chicago, Milwaukee, and St. Paul, the Chicago and Northwestern, and the Minneapolis, St. Paul, and Saulte Ste. Marie railroads; 14 miles N. of Oshkosh. The river is navigable for steamboats to Fond du Lac. Here are National banks, a public library, electric lights, and daily and weekly newspapers. The city is widely known as an important lumber mart and as a popular summer resort. It has manufactures of stoves, machines, woolen goods and brick and saw, lumber, and paper mills. Pop. (1910) 5,734; (1920) 7,171.

NEERWINDEN, a small village in the N. W. corner of the Belgian province of Liége; noted for the victory gained by the French under Luxembourg over the English under William III. (July 29, 1693), and also for the defeat of the French under Dumouriez by the allies under the Prince of Coburg, March 18, 1793.

NEGAPATAM, a seaport of British India, on the Coromandel coast, 180 miles S. by W. of Madras city. Originally a Portuguese settlement, it was taken by the Dutch in 1660, and by the English in 1781. The port trades in cotton, live-stock, ghi (exported), and spices, piece goods, coal, gunny bags (imported), chiefly with Burma, the Straits Settlements, and Ceylon. Pop. about 65,000.

NEGAUNEE, a city in Marquette co., Mich.; on the Marquette and Ishpeming, the Chicago and Northwestern, and the Duluth, South Shore, and Atlantic, and the Lake Superior and Ishpeming railroads; 10 miles W. of Marquette. It is built on a ridge named Iron Mountain, at an elevation of about 1,000 feet above Lake Superior. It contains a high school, waterworks, a public library, electric lights, a National bank, and street railroads. It has a noted cluster of productive iron mines within its limits. Pop. (1910) 8,460; (1920) 7,419.

NEGOTIABLE INSTRUMENTS, documents which may be converted into cash, representing money. They may be divided into two classes: those based on legislation, such as government script; or on credit, personal or otherwise, such as a bank note, representing the credit of a banking institution, or a personal check, or promissory note, representing the credit of an individual. Bonds, stocks, mortgages are further specimens of such documents. Those based on statute are usually converted into money at their face value, in theory, at least, though actually, if the credit of a government is low, they exchange for more money in gold than their face value. Documents based on credit are "discounted," usually on the basis of the current rate of interest, where the credit of the individual or firm is good.

NEGRITOS (ne-grē'tōz), the name given to certain negro-like tribes inhabiting the interior of some of the Philippine Islands, and differing both in features and manners from the Malay inhabitants of the Eastern Archipelago. They seem to be more closely akin to the Andaman Islanders than to either Papuans or any other stock; and are also known as Aëtas or Itas (see PHILIPPINE ISLANDS). The name is also used in a wider sense for the Papuans and all the Melanesian peoples of POLYNESIA (*q. v.*).

NEGRO, the distinctively dark, as opposed to the fair, yellow, and brown varieties of mankind. Their original home was probably all Africa S. of the Sahara, India S. of the Indo-Gangetic plains, Malaysia and the greater part of Australasia. In early and middle Tertiary times this tract was probably

broken up by the sea and the disappearance of the region named by Sclater Lemuria. The negro is best represented by the Sudanese tribes in Africa. Varieties are found throughout that Continent, with differing characteristics. Negroid races are also found in Madagascar, New Guinea, and Melanesia. The classification of these is difficult, and ethnologists do not agree in relation to them. Indeed, knowledge as to the negro is relatively slight, although advances have been made in recent years.

NEGRO EDUCATION in America began with the early efforts of individual masters or slave owners for economic reasons. They were supplemented by Spanish and French missionaries as a part of their effort to convert the Indians and the Negroes to Christianity.

The first settlers of the American Colonies, who offered Negroes the same educational and religious privileges which they accorded to white persons, were the Quakers. The Society for the Propagation of the Gospel, an organization of the Episcopal Church of England, attempted education as well as missionary work among Indians and Negroes, the first school being opened by the Rev. Samuel Thomas in South Carolina in 1695. In 1747 the Rev. William Sturgeon, a student of Yale, and ordained in London, opened a school for Negroes in Philadelphia.

Prohibitive legislation against the education of the Negro began with the Act of South Carolina in 1740, but the Northern and New England States still continued to provide teachers for colored children. In 1828 there were three public schools for Negroes in Boston, one in New Haven, one in Salem, and one in Portland, Me. In New York City the New York African Free School was organized in 1787, and was the first to introduce industrial training. In 1801 the Convention of Abolition Societies of New Jersey had several schools in operation. During the latter part of the 18th century and the early part of the 19th century practically all negro education was conducted either by the Church or by Abolition societies.

A colored settlement was begun near Xenia, O., where Wilberforce University had its beginning. The sixth census in 1850 shows that Pennsylvania had 3,114 Negro children in school, New York 2,607, Ohio 1,321, New Jersey 1,243; in 1860 New Jersey had 2,741, Ohio 5,671, New York 5,694, and Pennsylvania 7,573.

The first Negro to graduate from a college was John B. Russworm from Bowdoin. The first institution exclusively for the higher education of Negro youth was opened in Philadelphia, 1852. Avery College was incorporated at Allegheny City, 1849. Ashmun Institute, afterward Lincoln University, was founded in 1854 in Chester co., Pa. Wilberforce University in Ohio was formally incorporated in 1856.

The earliest advocate of manual training for colored pupils was Frederick Douglass, and industrial schools were opened in Ohio and Indiana. Free public schools for colored children were established by law in Massachusetts 1820, New York 1821, Rhode Island 1828, Pennsylvania 1834, New Jersey 1844. The foundations of Hampton Institute were laid at Fortress Monroe in 1861. After the Emancipation Proclamation, Negro schools were established in all parts of the South by the Federal Army.

The Freedmen's Bureau was created March 3, 1865, and in the five years of its existence it established 4,239 schools, employed 9,307 teachers and taught 247,333 pupils, expending for Negro education $3,521,936, while the benevolent organizations cooperating with the bureau expended $1,572,000. In addition the freed colored people raised and expended for their own schools $785,700.

The American Missionary Association, which helped to establish Hampton, also started Fisk University at Nashville, Tenn.; Atlanta University, Atlanta, Ga., and Straight University at New Orleans, La. It also established normal schools at Charleston, S. C.; Macon, Ga.; Talladega and Mobile, Ala.; high schools at Wilmington and Beaufort, N. C.; Savannah, Ga.; Memphis and Chattanooga, Tenn.; and Louisville, Ky.

The American Freedmen's Union Commission, organized in 1866, established 458 schools. The New England branch of the same society sent out 180 teachers, who instructed 10,000 pupils. The New York branch supported 125 schools, with 222 teachers. The Baltimore Association for the Moral and Educational Improvement of the Colored People built more than 50 school houses.

West Virginia was the first Southern State to establish a public school system for colored children, in 1863. The District of Columbia, Louisiana, and Maryland in 1864; Missouri, 1865; Alabama and Tennessee, 1867; Arkansas, Florida, and South Carolina, 1868; North Carolina and Virginia, 1869; Georgia, Mississippi, and Texas, 1870; Kentucky, 1874; and Delaware, 1875.

At present the chief supervising agencies for Negro common schools are the State and county boards of education; the Jeanes Fund; the General Education

Board, the Slater and Peabody Funds, and the Rosenwald Foundation (through the administration by Tuskegee of funds for rural improvement). Alabama, Arkansas, Kentucky, Louisiana, Mississippi, North Carolina, Virginia have State colored supervisors in the rural schools. The largest single contribution to the education of the Negro was made by Pierre S. duPont of Delaware, who in 1919 gave $900,000 for building and equipping rural Negro schools in Delaware.

The Baptist, Catholic, Congregational, Friends, Lutheran, Methodist Episcopal, Presbyterian, Reformed Episcopalian, and Reformed Presbyterian, Seventh Day Adventists, and United Brethren churches maintain boards which carry on educational work among the Negroes. The Society of Friends conducts a number of schools, notably the one at Cheyney, Pa., a normal school; the outgrowth of the old Institute for Colored Youth, formerly at Philadelphia, founded in 1852.

The United States Bureau of Education's report on Negro education gives 64 public high schools for colored persons. These schools had 49 teachers, 29,923 elementary students, and 8,453 secondary students—a total of 29,376. These high schools were located by States as follows: Alabama, 4; Arkansas, 5; Delaware, 1; District of Columbia, 2; Florida, 2; Georgia, 1; Kansas, 1; Kentucky, 9; Maryland, 1; Mississippi, 1; Missouri, 2; Oklahoma, 5; South Carolina, 1; Tennessee, 5; Texas, 13; Virginia, 6; West Virginia, 5.

Howard University, the largest institution for the higher education of the Negro, was founded by the Freedmen's Bureau in 1869. It comprises colleges of law, medicine, dentistry, pharmacy, theology, education, arts. It is connected with the Freedmen's Hospital, which serves as a practice school for the graduates in medicine and pharmacy.

In 1875 Booker Taliaferro Washington graduated from Hampton Institute, whither he had entered in 1872. On July 4, 1881, he established the Tuskegee Normal and Industrial Institute in Alabama, the greatest institution of its kind in the world.

Expenditures.—During 1917-1918, the expenditures for private and higher schools for the Negro in the United States were by States and municipalities $686,253; by the United States Government, $381,000; from other sources than those mentioned above, $3,425,000; total, $4,492,253. There was expended for colored public schools by the sixteen former slave States, the District of Columbia and Oklahoma, $12,964,457. The total expenditure for Negro education was $17,456,710.

It is roughly estimated that the religious and philanthropic organizations have contributed since 1865 about $63,500,000 for the education of the Negro in the South. During this same period the Negroes themselves, by direct contributions through their churches and other means, have contributed over $30,000,000 for their education. It is estimated that since 1870 the Southern States have expended from their public funds about $143,000,000 for Negro common schools.

School Property and Endowments.—The total value of the property, including scientific apparatus, grounds and buildings owned by institutions for secondary and higher training of Negroes, amounts to about $24,792,669.

The endowments or productive funds of schools for Negroes amount to approximately $9,550,000. Of this amount $3,050,000 belongs to colleges and universities, and $6,500,000 to normal and industrial schools. Only about twenty colleges for Negroes have endowments. During the year 1917-1918 all Negro schools increased their endowments about $500,000.

Contributions of Negroes for Education.—It is estimated that through the churches and other means Negroes are each year raising about $2,000,000 for the support of 175 schools. Their school property is valued at about $2,500,000.

NEGRO IN AMERICA, THE. The first mention of the Negro in America is found in the records of the voyages of Columbus. In 1501, or earlier, Negro slaves were familiar in the West Indies, African slaves having been brought over by the Spanish émigrés. From 1505 to 1510 there are records of King Ferdinand sending slaves to the West Indies. In 1516, 30 Negroes accompanied Balboa and assisted him in building the first ship constructed on the Pacific Coast. On accession to the Spanish throne in 1517, Charles V., also Emperor of Germany and the Netherlands, granted the exclusive monopoly to Flemish noblemen to import annually 4,000 Africans to Hispaniola, Cuba, Jamaica, and Porto Rico. (References: Lowery, "Spanish Settlements Within the Limits of the United States, 1513-1561"; Wright, "Negro Companions of Spanish Explorers," American Anthropologist, Vol. IV., N. S., 1902.")

In August, 1619, a Dutch vessel brought to Jamestown 20 Negroes, who were sold into servitude. Virginia did not give statutory recognition to slavery

as a system until 1661. In the records of the county courts, Negroes are designated as "servants," never as "slaves." (See Russell, "The Free Negro in Virginia, 1619-1865," pp. 22-25; Ballagh, "White Servitude in Virginia," p. 45.)

The Negroes were first imported into Massachusetts from Barbadoes 1636 or 1637; into New York about 1650; into Maryland 1632. In New Jersey the date is indefinite, although the word "slave" occurs in 1664. In Delaware about 1702. First heard of in Pennsylvania in 1688 through the memorial of Francis Daniel Pastorius of Germantown. Slavery was recognized officially in Connecticut in 1650; in Rhode Island in 1652; in New Hampshire in 1714; in North Carolina in 1715; in South Carolina in 1682; in Georgia in 1749. These dates are significant in that they show the presence and distribution of the Negro over the area of the United States. (See Brawley, "A Short History of the American Negro"; "The Negro Year Book.")

Population.—In 1625, six years after the first Negroes were brought to Virginia, there were only twenty-three, twelve males and eleven females. In 1659 there were 300; in 1683, 3,000; in 1708, 12,000; in 1712, 23,000; in 1756, 120,156; in 1774, 200,000, or 14 per cent of the population. The first census in 1790 showed the Negro constituting 19.3 per cent, or 757,208, of which 697,899 were slaves. In 1910 the census returns give 9,827,763.

Distribution of Population.—Negroes are distributed in the United States as follows: The South, 8,749,427; the North, 1,027,674; the West, 50,662. In 1910 classification by sex was as follows: Males, 4,885,881; females, 4,941,882.

Georgia has the largest Negro population of any State. In 1910 there were 1,176,987. The State of Mississippi the largest percentage, 56.2 per cent.

The five cities with the largest Negro population are: Washington, D. C., 94,446; New York, 91,709; New Orleans, La., 89,262; Baltimore, Md., 84,749; Philadelphia, Pa., 84,459. Four cities of 25,000 or more, with one-half the population Negro, are Jacksonville, Fla., 50.8 per cent.; Montgomery, Ala., 50.6 per cent.; Charleston, S. C., 52.8 per cent.; Savannah, Ga., 51.1 per cent.

The balance of distribution and the percentage of population has been somewhat disturbed by the migration of 1918, but it seems to have readjusted itself to pre-war conditions in the large Southern cities.

Economic Conditions.—The Negro is capable of the hardest kind of work under climatic conditions often intolerable to whites. During the period of slavery the race was engaged chiefly in agriculture and in manual labor. The following tables show the distribution by occupation:

In 1910 the number of Negroes 10 years of age and over in gainful occupations was: 5,192,535, or 71.0 per cent. of total Negro population of this age; by sex the number was, males, 3,187,554; females, 2,013,981. Negroes constitute 13.6 per cent. of all persons in gainful occupations.

	1910	1900
Per cent. of total population in gainful occupations	53.3	50.2
Per cent. all males in gainful occupations	81.3	80.0
Per cent. all females in gainful occupations	23.4	18.8
Per cent. of all Negro males in gainful occupations	87.4	84.1
Per cent. of all Negro females in gainful occupations	54.7	40.7

NUMBER OF NEGROES IN EACH MAIN CLASS OF OCCUPATIONS

OCCUPATION	1910	1900	INCREASE	
			Number	Per cent.
Agricultural pursuits	2,893,674	2,143,176	750,498	35
Professional Service	69,929	41,324	22,605	47
Domestic and personal service	1,099,715	1,324,160	*224,445	*17
Trade and transportation	425,043	209,154	215,889	103
Manufacturing and mechanical pursuits	704,174	275,149	429,025	156

* Decrease.

A larger proportion of persons 10 years of age and over in the United States were engaged in gainful occupations in 1910 than in 1900. This increase was especially marked for the Negroes.

The census reports on occupations for 1900 appeared to indicate that in such trades as carpentry, plastering, blacksmithing, etc., Negroes were losing ground. The 1910 census on occupations indicates that the Negro has made gains in practically all the trades in which he appeared in 1900 to be losing ground.

In recent years there has been a large increase in the number of Negroes working in factories. They are, to a large extent, doing the rougher, semi-skilled work. A marked tendency to-

ward more highly skilled labor is noticeable. In 1900 the number in factory industry was 131,216; in 1910 the number was 358,180; an increase of 226,964, or 173 per cent.

According to the census of 1910 there were, excluding the 10,601 boarding and lodging housekeepers, 38,382 Negroes engaged in business enterprises. This did not include those operating blacksmith, barber and shoe shops, and several other classes of business connected with the trades for which separate returns for proprietors and employees were not made. Probably 5,000 or more should have been added, making the total about 43,000. It is estimated that there are now 50,000 or more Negroes engaged in business.

The general effect on the Negroes of the United States by the World War was greatly to increase the number of occupations in which they were engaged. In Pittsburgh industrial concerns alone there were in 1916, 2,550 Negroes employed, while in 1918 the number had increased to 8,325. (Epstein, "The Negro Migrant to Pittsburgh.")

The following table shows the general progress of the Negro since 1866, the end of the Civil War:

	1866	1919	Gain in Fifty-three Years
Economic Progress—			
Homes owned	12,000	600,000	588,000
Farms operated	20,000	1,000,000	980,000
Businesses conducted	2,100	50,000	47,900
Wealth accumulated	$20,000,000	$1,100,000,000	$1,080,000,000
Educational Progress—			
Per cent. literate	10	80	70
Colleges and normal schools	15	500	485
Students in public schools	100,000	1,800,000	1,700,000
Teachers in all schools	600	38,000	37,400
Property for higher education	$60,000	$22,000,000	$21,940,000
Annual expenditures for education	$700,000	$15,000,000	$14,300,000
Raised by Negroes	$80,000	$1,700,000	$1,620,000
Religious Progress—			
Number of churches	700	43,000	42,300
Number of communicants	600,000	4,800,000	4,200,000
Number of Sunday schools	1,000	46,000	39,000
Sunday school pupils	50,000	2,250,000	2,200,000
Value of church property	$1,500,000	$85,900,000	$84,400,000

The social and moral condition of the Negro is rapidly improving, owing chiefly to education and to a better economic position in the community. Wherever economic conditions of the Negro improve, family life and morals improve. Poverty, overcrowding in the cabins in the South and tenements in the North, and segregation in the worst quarters in the city, result in destruction of family life, and in disease and crime.

The Negro has improved to a larger extent educationally than in any other line. (See "Negro Education in the United States.") The first periodical published was in 1865, "The Christian Recorder." Negroes now own and publish 450 periodicals, of which 70 are religious, 85 educational, 7 organs of national associations and general literature, 30 fraternal organs, and 220 newspapers.

The first Negro lawyer, Allen B. Macon, was admitted to practice law in Worcester, Mass., 1845. There are now 779 Negro lawyers. There are 33 national associations of various kinds; social settlements by Negroes are distributed throughout the country; over 60 fraternal organizations, with a total membership of 2,000,000. Of these, the Knights of Pythias have $1,000,000 for endowment and $2,500,000 of property; the Odd Fellows $2,000,000 of property and the Masons $1,000,000. These fraternal organizations are largely for the purpose of improving health, social and economic conditions.

The list of books published by Negroes is necessarily faulty and incomplete. The earliest production in the United States was "Twelve Years a Slave," by Solomon Northrup, Buffalo and London, 1853; the next, "The History of the Underground Railroad," by William Still, Philadelphia, 1872. Hundreds are listed, not including special studies on social and economic questions. (Reference, "A Select Bibliography of the Negro American," W. E. B. DuBois, Atlanta University Publication, No. 10, 1905; "Bibliography of the Negro in America," report of the United States Commissioner of Education, 1894, Vol. I.; "Select List of References on the Negro," A. R. Grifin, Library of Congress, Second Edition, 1906.)

Negro Migration.—Within three years, following the outbreak of the war in Europe, more than 400,000 Negroes moved north. In extent, this movement is without parallel in American history.

The real beginnings of Negro migration within the limits of the United States began between 1815 to 1850, with the flight of fugitive slaves to the Northwest. But the migration of 1917-1918 was more nearly similar to the exodus of 1879-1880 to Kansas, and the one to Arkansas and Texas in 1888-1889.

The real causes of the recent migration as expressed by refugees were the agricultural depression in the lower Mississippi valley, resentment against political conditions in the South, desire for economic and industrial opportunity, and inadequacy of school facilities for Negro children. This migration was hailed as the "Exodus to the Promised Land," and was characterized by an unusual degree of excitement. It had no conspicuous leaders, and although apparently sudden and spontaneous, it was in reality an accentuation of a process which had been going on for a hundred years. The total increase in the Negro population between 1900 and 1910 was 11.2 per cent. In the past 50 years the Northern movement has transplanted about 4 per cent. of the entire Negro population. Chicago increased her Negro population 46.3 per cent., and Columbus, O., 55.3; an increase wholly at the expense of the South, for the rural communities of the North are very sparsely populated with Negroes, and the increment accruing from birth is almost negligible.

When there is any migration southward it is largely in the western South Central division, while the migration northward has been more evenly distributed by divisions, except that a comparatively small number have gone to the New England States. Previous to the World War, the States having the greatest gain from Negro migration were Arkansas, 105,500; Pennsylvania, 85,000; Florida, 84,000; New York, 58,450; Illinois, 57,500.

The migration of 1916-1917 brought in its wake a train of industrial and racial conflicts in East St. Louis, Chicago, and some other cities, but they seem to have subsided quickly. The problem of the refugees was handled by the Urban League with intelligence and efficiency, best displayed in Detroit, where there was a minimum of suffering, in comparison with the congestion of emigrants. (Reference, "Negro Migration During the War," Emmett J. Scott, Preliminary Economic Studies of the War, No. 16, Carnegie Endowment for International Peace.)

NEGROS, an island in the Philippine group, between Panay and Cebu; area, 5,191 square miles; pop. 460,776. In the S. W. part is the mountain chain of Sojatas, and lying N. and N. E. of this are large plains cut by numerous rivers. The interior has not been explored. The island is divided into two provinces, Western and Eastern Negros. The former is very fertile, and owing largely to the work of the various European settlers, is in the front rank of all the provinces of the archipelago. The Eastern province, while not so fertile, produces large crops of sugar-cane, hemp, rice, cocoa, and cotton. The forests of the island furnish an abundance of fine building woods, among them teak. On the seashores are numbers of shell fish, tortoise shell, lagan, sea cucumbers, etc., while near the W. coast deposits of excellent coal have recently been discovered. Bacolod is the capital of the Western province, and has a number of fine public and private buildings. There are over a score of cities with a population of 10,000 and over.

NEHEMIAH, three persons of this name are mentioned in Scripture: One who came with Zerubbabel from Babylon (Ezra ii: 2; Neh. vii: 7); another, the son of Azbuk (Neh. iii: 16); and lastly the celebrated Jewish leader, the son of Hachaliah (Neh. i: 1), and brother of Hanani (i: 2, vii: 2).

In modern Hebrew Bibles, as that of Van der Hooght, the Book of Nehemiah is distinct from that of Ezra, immediately following it as one of the Hagiographia. In the Jewish canon, however, the two were treated as a single work. No quotation from the book occurs in the New Testament. The Septuagint translation of the book is badly executed.

NEILGHERRY HILLS, a mountainous district in the S. of India, rising abruptly from the plains to the height of 6,000 feet, though individual peaks shoot up to 8,760 feet. The mass is entirely isolated, with the exception that a precipitous granite ridge leaves its W. face and connects it with the Western Ghâts. The surface consists of grassy uplands with large groves of forest trees; but the lower slopes are heavily timbered. Owing to their great elevation, the Neilgherry Hills have a delightfully cool climate, and are much resorted to on this account by invalided Europeans, the principal station being Ootacamund.

NEILL, CHARLES PATRICK, American educator and statistician, born in Rock Island, Ill., 1865; graduated from Georgetown University; became instructor in Notre Dame University; head of economic department of Catholic Uni-

versity, 1897-1905; was assistant recorder for Anthracite Coal Strike Commission; appointed Commissioner of Labor by President Roosevelt, remaining as such under Taft and Wilson; resigned in 1913 to organize the Labor and Welfare Department of the American Smelting & Refining Co., New York City. In 1915 he went to Washington to organize a bureau of information for the Southeastern railways.

NEILSON, ADELAIDE, an English actress; born in Leeds, Yorkshire, England, March 3, 1848. Her real name was Elizabeth Ann Brown, though she was also sometimes called Lizzie Bland (Bland being the name of her stepfather). She made her début as Juliet when only 17 years old. She appeared as *Amy Robsart* in 1870, in London, with immense success, and by 1878 stood at the head of her profession. In 1872 she came to the United States, playing in Booth's theater, New York, and in Boston, where she was equally successful. She made four visits to the United States, her last one being in 1880. She died in Paris, France, Aug. 15, 1880.

NEILSON, WILLIAM ALLAN, born in 1869 in Doune, Scotland, took his M. A. degree at Edinburgh University in 1891, and for a time taught in Scotland. He went to Toronto in 1895 and was instructor in English at Bryn Mawr from 1898 to 1900. He taught in English at Harvard 1900-1904, and later as professor 1906-1917. His works include: "The Origins and Sources of the Court of Love" (1899); "Essentials of Poetry" (1912); "The Facts About Shakespeare" (1913); "Burns, How to Know Him" (1917). Has also edited a number of works and contributed articles to technical journals and literary magazines.

NEISSE (nīs'se), a town of Prussian Silesia, and an important fortress of the second rank; in a broad valley on the Neisse, an affluent of the Oder; 47 miles S. E. of Breslau. It manufactures tapestry, linen, and chemicals and has great wool markets. Pop. about 27,500. Neisse was formerly the chief town of a principality, and residence of a prince-bishop.

NEJD, or NEJED (Arabic, "elevated country"), a term sometimes used as an element in Arabic place-names, but used absolutely to signify the country in the interior of Arabia forming the Central Wahabi kingdom. A great part of its surface is sandy desert interspersed with fertile spots. The more elevated districts feed immense droves of camels and the best breeds of Arab horses. Chief town Riad, the Wahagi capital; pop. about 28,000.

NELSON, a city of British Columbia, on the Kootenay river. It is the center of an important mining district which produces silver, gold, copper, lead, coal, and zinc. It contains railroad repair shops and shipyards. There are also manufactories of iron, cigars, shingles, boats, and launches. Pop, about 7,500.

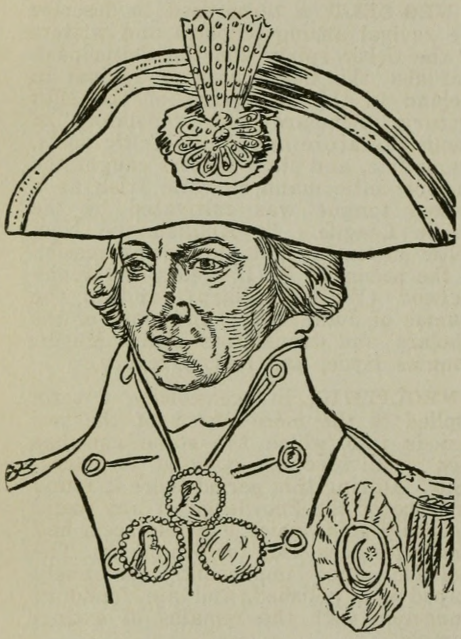
NELSON, a city of England in Lancashire. It is in the coal mining region and has important manufactories of cotton, silk, and worsted. It has several important buildings, including a town hall, a library, and technical school. Pop. about 40,000.

NELSON, the capital of a provincial district in New Zealand, at the N. end of South Island, and the mouth of the Maitai, a small river at the head of Blind Bay. The situation is very beautiful, on a flat, hemmed in by rugged hills and amidst almost tropical luxuriance. The harbor is sheltered, and there is regular steam communication with Sydney and Melbourne. The city was founded in 1841. There is a cathedral, a literary institute, and museum, public hospital, and asylum. The manufactures of the town comprise cloth, leather, soap, and jam. Pop., with suburbs, over 10,000.

NELSON, HENRY LOOMIS, American journalist; born in New York City, 1846; died in New York City, 1908. He graduated from Williams College, was admitted to the bar, but soon turned to newspaper work as a means of earning his livelihood. Was Washington correspondent for the Boston "Post" from 1875 to 1885; then editor for a year. Editor of "Harper's Weekly," 1894-1898; professor of political science, Williams College. Among his writings are "Our Unjust Tariff Law" (1884); "The Money We Need" (1896); and "The United States and Its Trade" (1902).

NELSON, HORATIO, VISCOUNT, an English naval officer; born in Burnham Thorpe, Norfolk, England, Sept. 29, 1758. At the age of 12 he entered the navy as a midshipman, and in 1773 accompanied Commodore Phipps in an expedition toward the North Pole. In 1777 he was made a lieutenant, and in 1779 raised to the rank of post-captain. On the commencement of the war with the French Republic he was made commander of the "Agamemnon," of 64 guns (1793), with which he joined Lord Hood in the Mediterranean, and assisted at the siege of Bastia (May, 1794). At the siege of

Calvi (July 10, 1794) he lost an eye. For his gallantry at the battle of Cape St. Vincent (Feb. 14, 1797) he was made rear-admiral of the blue, and appointed to the command of the inner squadron at the blockade of Cadiz. His next service was an attack on the town of Santa Cruz, in the Island of Teneriffe, in which he lost his right arm. In 1798 he joined Lord St. Vincent (Admiral Jervis), who sent him to the Mediterranean to watch the progress of the armament at Toulon. Notwithstanding his vigilance, the French fleet which conveyed Bonaparte to Egypt escaped. Thither Nelson followed, and after various disappointments he discovered the enemy's fleet moored in the Bay of Aboukir, where he obtained a most complete victory, all the French ships but two being taken or destroyed (Aug. 1, 1798). This achievement was rewarded with the title of Baron Nelson of the Nile and a pension of $10,000. In 1801 he was employed on the expedition to Copenhagen under Sir Hyde Parker, in which he effected the destruction of the Danish ships and batteries. On his return home he was created viscount. When hostilities recommenced after the Peace of Amiens, Lord Nelson was appointed to command the fleet in the Mediterranean, and for nearly two years he was engaged in the blockade of Toulon. In spite of his vigilance the French fleet got out of port (March 30, 1805), and being joined by a Spanish squadron from Cadiz, sailed to the West Indies. The British admiral hastily pursued them, and they returned to Europe and took shelter at Cadiz. On Oct. 19, the French, commanded by Villeneuve, and the Spaniards by Gravina, ventured again from Cadiz, and on Oct. 21 they came up with the British squadron off Cape Trafalgar. An engagement took place, in which the victory was obtained by the British, but their commander was wounded in the back by a musket ball, and shortly after expired. His remains were carried to England and interred in St. Paul's Cathedral.



LORD NELSON

NELSON, KNUTE, United States Senator from Minnesota; born in Norway, Feb. 2, 1843, and came to the United States when six years old. He served in the Union armies during the war as a volunteer in the 4th Wisconsin Infantry. When he returned from the war he took up the study of law and was admitted to the bar in 1867. In 1871 he moved to Minnesota and served in the Minnesota senate from 1875-1878. From 1883 to 1889 he was the Representative from the fifth Minnesota district. In 1892 he became the Republican candidate for Governor of Minnesota and was elected. Although re-elected in 1894, he resigned the next year to become United States Senator.

NELSON, SAMUEL, an American jurist; born in Hebron, N. Y., Nov. 10, 1792; was graduated at Middlebury College in 1813; and in 1817 was admitted to the bar of Madison, N. Y. In 1820 he was presidential elector; and three years later was appointed circuit judge, which post he held till 1831, when he became an associate justice of the Supreme Court of New York. In 1837 he was raised to the chief justiceship. In 1845 President Tyler appointed him to succeed Judge Smith-Thompson as an associate justice of the United States Supreme Court. He died in Cooperstown, N. Y., Dec. 13, 1873.

NELSON, WILLIAM ROCKHILL, American journalist; born at Fort Wayne, Ind., March 7, 1841. He was educated at Notre Dame University in Indiana, from which he received the degree of LL. D. in 1911. He founded the Western Gallery of Art in Kansas City, Mo. In 1880 he founded the Kansas City "Star," a progressive Republican paper, of which he was owner and editor-in-chief until his death in April, 1915. Theodore Roosevelt wrote for the Kansas

City "Star" during the last few years of his life.

NELSON RIVER, a stream issuing from the N. end of Lake Winnipeg in Canada, and, after a N. E. course of 400 miles through Keewatin, falling into Hudson Bay. It discharges an enormous quantity of water, and is navigable for 127 miles from its mouth, though only about 70 or 80 miles for large steamers.

NELSONVILLE, a town of Ohio in Athens co., 62 miles S. E. of Columbus. It is situated on the Hocking River and on the Hocking Valley railroad. The town is the center of an important coal mining industry. It has manufactories of brick, sewer pipe, mining implements, car wheels, etc. Pop., (1910) 6,082; (1920) 6,440.

NELUMBIUM, the typical and only genus of the order *Nelumbiaceæ*. The species are remarkable for the beauty of their flowers. *N. speciosum* has magnificent flowers, magenta or white.

NEMEA, in ancient geography, a deep and well-watered valley of Argolis in the Peloponnesus, between Cleonæ and Phlius. It possessed a sacred grove, with a magnificent temple of Zeus, and was celebrated for the games called the Nemean Games, one of the great national festivals of the Greeks.

NEMEAN GAMES, in Greek antiquities, public games or festivals celebrated at Nemea, most probably triennially, in the Athenian month Boedromion (the modern August). The Argives were the judges at these games, which comprised boxing and athletic contests, as well as chariot-races; and the conquerors were crowned with olive.

NEMESIS, in Greek mythology, one of the infernal deities, daughter of Nox. She was the goddess of vengeance, always prepared to punish impiety, and at the same time liberally to reward the good and virtuous.

NEMI, LAKE OF, an extinct crater, 20 miles S. of Rome, accounted for its beauty the gem of the Alban Mountains. There was here a famous temple of Diana, portions of which have been recently excavated.

NEMOPHILA, a genus of *Hydrophyllaceæ*, with pinnatifid leaves and conspicuous flowers. Several species are found in the United States, chiefly in California. The best known is *N. insignis*, which has brilliant blue flowers with a white center. It is prized in gardens as a border plant.

NEMOURS (nuh-mör'), an ancient town in the French department of Seine-et-Marne, 40 miles S. E. of Paris. It gave a ducal title to the second son of Louis Philippe.

NENNIUS, the reputed author of a "History of the Britons," evidently of Cymric origin. It gives the mythical account of the origin of the Britons, the Roman occupation, the settlement of the Saxons, and closes with the 12 victorious battles of King Arthur. The writer has preserved valuable fragments of earlier treatises which have been lost.

NEO-CELT, a term used to describe the revival among scholars and writers of the Celtic spirit, and the Celtic past and also the Celtic literary revival in Ireland in the last years of the 19th century. Scholars and translators of Gaelic literature and Anglo-Celtic poets, dramatists, and story-writers caught the ancient celtic manner, while Irish as a spoken tongue was cultivated by the Gaelic League. In English the Neo-Celtic movement finds its best expression in the poems of W. B. Yeats and Fiona McLeod (William Sharp), and in the dramas of John Synge, and work of the scholars and translators Kuno Meyer, Douglas Hyde, and Lady Gregory.

NEOLITHIC, in archæology, a term applied to the more recent of the two periods into which the stone age has been subdivided, as opposed to palæolithic. During this period there is found no trace of the knowledge of any metal excepting gold, which it would seem had sometimes been used for ornaments. The neolithic stone implements are finely shaped and polished, and are found in connection with the remains of extinct animals.

NEON, a primary element existing in air. It was discovered by Ramsay and Travers, of England, who, in July, 1898, separated it from argon while experimenting with liquid air. Neon is a gas having a density of 14.67, and like argon, it is characterized by inertness.

NEOPHYTE, a term applied in the primitive Church to the newly baptized. They wore white garments at their baptism, and for eight days after. The Council of Nice (325 A. D.) ordered that neophytes should not be admitted to holy orders till their constancy had been in some measure proved. The term is still used by Roman missionaries for their converts from the heathen. A special use of the word was to denote one who, not having passed through the inferior grades, was, in view of I Tim. iii: 6, con-

sidered canonically unfit to be consecrated bishop.

NEO-PLATONISM, the name given to an important movement in the Alexandrian school. G. H. Lewes says that their originality consisted in having employed the Platonic Dialectics as a guide to Mysticism and Pantheism; in having connected the doctrine of the East with the dialectics of the Greeks; in having made Reason the justification of faith; and he concludes that "by their Dialectics they were Platonists; by their theory of the Trinity tney were Mystics; by their principle of Emanation they were Pantheists." Neoplatonism passed through three periods: (1) That of Ammonius Saccas and Plotinus, in the 3d century; (2) that of Porphyry and Iamblichus, in the 4th century; and (3) that of Proclus (412-485). Under Justinian (483-565) the Alexandrian school became extinct.

NEPAL (ne-pâl'), an independent kingdom of India, on the S. slope of the Himalayas; bounded on the N. by Tibet. on the S. and W. by Bengal, and on the E. by Sikkim; long. 80° 6'—88° 14' E.; length 500 miles; breadth about 150 miles; area about 54,000 square miles; pop. est. 2,000,000-5,000,000. The N. parts of the State embrace the main range of the HIMALAYAS (*q. v.*), with its offset spurs. on which stand the great peaks of Everest, Dhawalagiri, etc. On the S. of the State lies the Terai. The intervening territory consists of mountain ridges, embracing several valleys drained by the Kurnali, Gandak, Kosi, and other rivers. The climate of course varies greatly according to the altitude; the principal valley has a climate like that of southern Europe. The soil is very fertile, in some districts producing three crops in the year. The hillsides are terraced and the land is irrigated. Rice, opium, rape, linseed, tobacco, and various cereals and pulses are the more important products. Several minerals, as copper, iron, sulphur, and others exist, but are little worked. The forests contain valuable timber trees. Nepal has extensive trading relations with the provinces of British India and with Tibet. The valleys are inhabited by numerous different hill tribes, partly aboriginal, partly of Mongolian or Chinese descent; but the dominant race are the GURKHAS (*q. v.*), whose ancestors came to the Himalayan slopes from Rajputana in the 12th century, though it was not till 1769 that they made themselves masters of Nepal. They rapidly subdued the hill valleys to E. and W. of them, and, after a war with China (1789-1792), on account of Tibet, in which the Gurkhas were worsted, and a period of great internal disorder, Nepal came into conflict with the Indian government. War followed; in 1815 Sir David Ochterlony defeated the Gurkha armies in the W., and peace was agreed to; but the treaty not having been signed by the King of Nepal, a British force, 33,000 strong, advanced in the succeeding year to within three days' march of Katmandu, and compelled the Gurkhas to sign the treaty. Since that they have ceased their encroachments on British territory, and during the mutiny voluntarily sent to the assistance of the British a force which rendered useful service in the reduction of Oudh. The real ruler of the country is the prime minister; Sir Jang Bahadur held this office from 1846 to his death in 1877, and was succeeded by his son. But he was slain and supplanted by the head of a rival faction in 1885. Capital, Katmandu; pop. about 50,000.

NEPHELINE, or **NEPHELITE**, a mineral species included by Dana in his unisilicate sub-division of anhydrous silicates. It has a vitreous or greasy luster. Crystallization, hexagonal, usually occurring in six or twelve-sided prisms, with plane or modified summits.

NEPHRITE, a mineral, an aluminous variety of amphibole among the bisilicates, of a leek-green color, massive, and in rolled pieces, remarkable for its hardness and tenacity. It was formerly worn as a remedy for diseases of the kidneys. A unisilicate, zoisite, is also spoken of as nephrite, as is jade. All three are capable of fine polish, and have been used since prehistoric times for ornaments, weapon-handles, and even weapons.

NEPOMUK, or **POMUK, JOHN OF**, the patron saint of Bohemia, honored as a martyr of the seal of confession; born in Pomuk, a few miles S. E. of Pilsen, Bohemia, about 1330. Having studied at the University of Prague and taken holy orders, he held various ecclesiastical offices in Prague, and was appointed confessor to Sophia, wife of King Wenceslaus IV. For refusing to betray to this monarch the confession of the queen John was put to the torture, then tied hand and foot, and flung into the Moldau, in March, 1383. His memory was cherished with peculiar affection by the Bohemian people, and in 1729 he was canonized by Pope Benedict XIII. His memory is celebrated May 16.

NEPOS, CORNELIUS, a Roman historical writer; born probably in Verona, Italy; lived in the 1st century B. C. He was the contemporary and friend of Cicero, Atticus, and Catullus. The ancients ascribed to him the following works: "Chronology"; "Books of Examples"; "Lives of Cato and Cicero"; and "Illustrious Men." The last is supposed to have consisted of 16 books, but only 25 brief biographies of warriors and statesmen, mostly in Greek, have survived.

NEPTUNE, in Roman mythology, the fabled god of the sea; the son of Saturn and Rhea, and the brother of Jupiter and Pluto. He is generally identified with the Greek Poseidon, and is variously represented; sometimes with a trident in his right hand, a dolphin in his left, and with one of his feet resting on part of a ship; at others in a chariot drawn by sea-horses, with a triton on each side. He was said to preside over horses and the manger.

In astronomy, a planet, the most remote of any yet discovered. The diameter of Neptune is nearly 35,000 miles. Its density is only a fifth that of the earth, its mean distance from the sun 2,792,000,000 miles, and its year 165 times as long as one of ours. Mr. Lassell discovered that it has one satellite.

NEREIDS, in classical mythology, sea nymphs, daughters of Nereus and Doris, and constant attendants on Poseidon or Neptune. They are represented as riding on sea-horses, sometimes with the human form entire, and sometimes with the tail of a fish.

NEREIS, sea-centipede; the typical genus of the family *Nereidæ*. The species are numerous and widely distributed.

NEREOCYSTIS, a genus of *Fucaceæ* family *Laminardiæ*. The stem, which is filiform, is many fathoms long.

NERNST, WALTER, German scientist; born in 1864 at Briesen, Prussia, he was a student at Zürich, Berlin, Graz, and Würzburg; in 1887 was appointed assistant to Ostwald, and in 1889 became professor of physics at Leipsic University. In 1891 he became professor of Göttingen, and in 1905 at Berlin. In 1907 he published in German and English a series of lectures delivered by him at Yale on applications of thermodynamics to chemistry. The Nernst incandescent electric lamps which he invented was one of the first of its class. He has published several works on physics in German.

NERO, LUCIUS DOMITIUS, called after his adoption CLAUDIUS DRUSUS, Roman emperor; born in Antium, Italy, Dec. 15, 37 A. D. He was the son of Cneius Domitius Ahenobarbus, and of Agrippina, daughter of Germanicus. He had the philosopher Seneca for his teacher; was adopted by Claudius, A. D. 50, and four years after succeeded him on the throne. At the commencement of his reign his conduct excited great hopes in the Romans; he appeared just, liberal, affable, and polished; but this was a mask which soon fell off. He caused his mother to be assassinated, and vindicated the unnatural act to the Senate on the ground that Agrippina had plotted against him. He divorced his wife, and led a most shameless and abandoned life. In 64, Rome was burnt, and popular suspicion pointed to Nero as the author of the conflagration. He charged the Christians with it, and commenced a dreadful persecution of them. His cruelties, extravagance, and debauchery at length aroused the public resentment. Piso formed a conspiracy against the tyrant, but it was discovered and defeated. That of Galba, however, proved more successful, and Nero being abandoned by his flatterers, put an end to his existence near Rome, June 9, 68 A. D.

NERTCHINSK, a town of Siberia, in the Trans-Baikal Territory, on the Nertcha, a tributary of the Shika (a head-stream of the Amur), 875 miles E. of Irkutsk. The district of which it is the center yields silver, lead, zinc, tin, and gold; and the town is a trading center for Russians, Mongols, Turcomans, and Tunguses, exchanging tea, gunpowder, and furs. Pop. about 12,000. Another Nertchinsk, NERTCHINSKIY-ZAVOD, is 180 miles S. E., on a tributary of the Argun, and is also a great mining center. The silver mines and gold mines are largely worked by convict labor.

NERVA, MARCUS COCCEIUS, a Roman emperor; born in 32 A. D. He twice held the honor of consulship before his election to the dignity of emperor, and was elected by the Senate after the murder of Domitian, Sept. 18, A. D., 96. He displayed great wisdom and moderation, and rectified the administration of justice, and diminished the taxes; but finding himself, on account of his advanced age, not vigorous enough to repress the insolence of the Prætorian Guards, he adopted M. Ulpius Trajanus, then at the head of the army of Germany, who succeeded him on his death, Jan. 27, 98.

NERVE, or NERVOUS SYSTEM. A nerve is one of the fibers which proceed from the brain and spinal cord, or from the central ganglia of lower animals, and ramify through all parts of the body, and whose function is to convey impulses resulting in sensation, motion, secretion, etc. The aggregate of these nerves, and the centers from which they proceed, forms the nervous system, the medium through which every act or detail of animal life is inaugurated and directed. The essential idea of any nervous system involves the necessary presence, firstly, of a nerve center or centers, which generate the nervous force or impulse; secondly, of conducting fibers or cords, the nerves; and thirdly, of an organ, part, or structure to which the impulse or impression may be conveyed. The nerve-centers of man and vertebrates generally are disposed so as to form two chief sets, which are to be regarded as essentially distinct. The brain and spinal marrow together (see BRAIN) constitute the first of these centers, and are collectively included under the name cerebro-spinal system or axis. The second system is the sympathetic or ganglionic. From each of these systems nerve-cords are given off—the cerebral and spinal nerves from the former; and the so-called sympathetic fibers from the latter. The brain and spinal cord are contained within the continuous bony case and canal formed by the skull and spinal column; while the chief masses of the sympathetic system form an irregularly disposed chain, lying in front of the spine, and contained within the cavities of the thorax or chest and abdomen. The general functions of the cerebro-spinal system are those concerned with volition and muscular movements, with the control of the senses, and in higher forms with the operations of the mind. The nerves of the sympathetic system in chief are distributed to the viscera, such as the heart, stomach, intestines, blood-vessels, etc.; and the operation of this system is in greater part of involuntary kind, and without the influence or command of the will. The cranial or cerebral nerves pass from the brain through different openings in the skull, and are all in pairs, the first pair being the olfactory nerves or nerves of smell; the second, the optic nerves, or nerves of sight; while others have to do with hearing, taste, general sensibility, and muscular motion. The spinal nerves, after issuing from their openings in the vertebral column, split into two divisions, one of which proceeds to supply parts behind the spine, while the other passes toward the front. The first eight spinal nerves on each side are called cervical, the next 12 are dorsal, the next five lumbar, then five sacral, and one coccygeal.

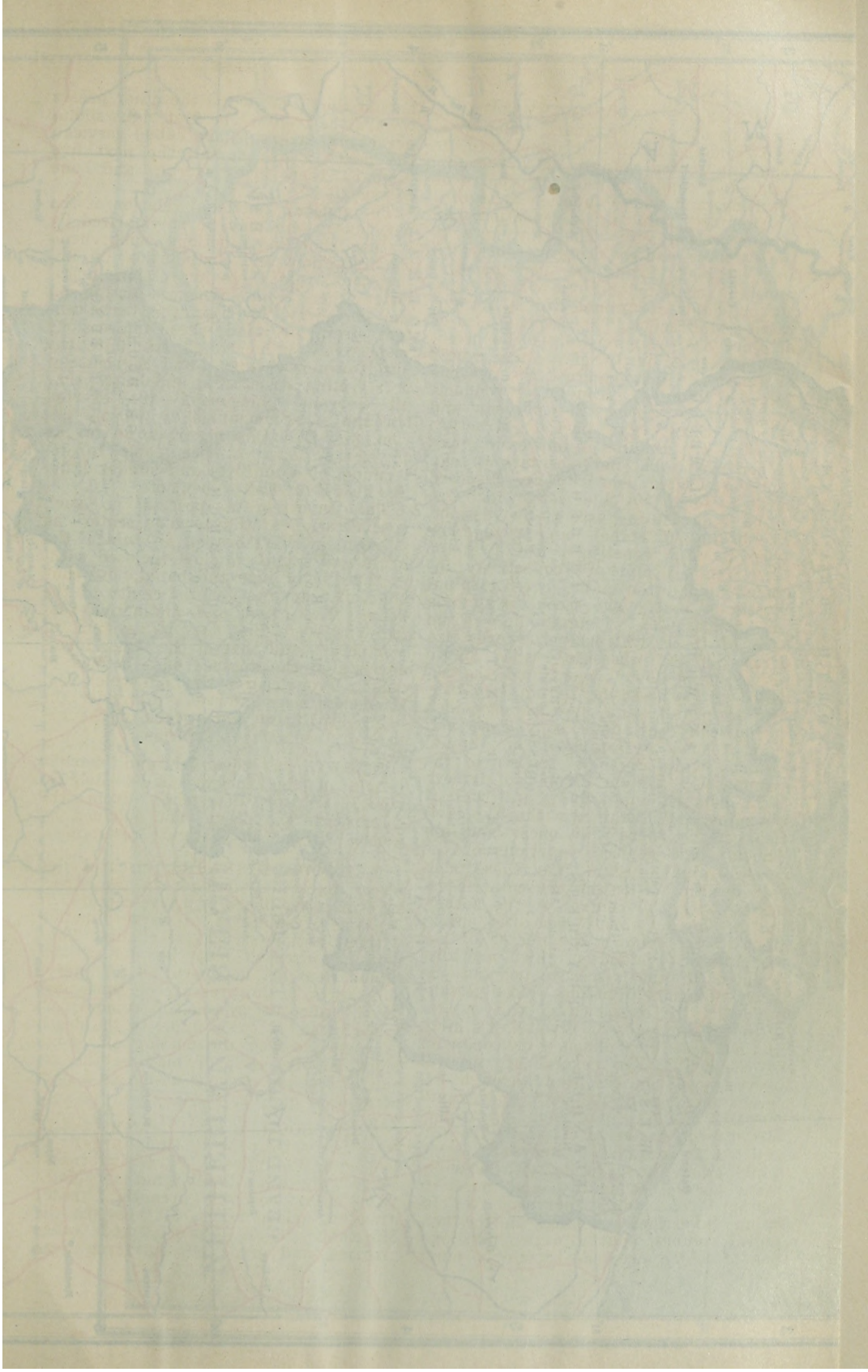
The general functional relation of the nervous system may be summarized by stating that its functions comprehend the reception and distribution of impressions; that these impressions originate either from influences acting on the periphery, or from the nerve-centers, brain, or mind; these impressions respectively influence or stimulate the mind or nerve-centers, and the muscles or secreting structures; and lastly, that all nervous phenomena are exerted through or accompanied by nervous action, and that this latter is, so far as physiology has yet been able to determine, of a uniform and similar kind. See also EYE; EAR; NOSE; etc.

The Invertebrata possess no such specialization of the nervous centers as is seen in Vertebrates, in which the brain and spinal cord are inclosed within their bony case and canal, and thus shut off from the general cavity of the body. The great and distinctive feature between the nervous system of Vertebrata and that of the lower forms consists in the absence of a defined or chief nervous center, through which consciousness may intervene to render the being intelligent, and aware of the nature of the acts it performs.

NERVII, a powerful and warlike people of the ancient Gallia Belgica, whose territory stretched from the Sambre to the ocean, not subdued by Cæsar without an obstinate resistance.

NERVOUS DISEASES, diseases due either to actual changes in the structure of nerve-fibers or nerve-centers, or to some irregularity of nerve function without actual structural change. Thus nervous diseases may be due to inflammation or degeneration of nerve substance; to the pressure on some part of the nervous system of tumors, effused blood, or other fluid; to the death of some part by the cutting off of its blood supply, etc.; or may be the result of lowered nervous action as a part of general bad health.

NESS, LOCH, a long, narrow lake of Inverness-shire, the second largest in Scotland, 6½ miles S. W. of Inverness; 50 feet above sea-level; length N. N. E. 22½ miles; average breadth 1 mile; area 19 square miles. It receives the Morriston, Oich, Foyers, and other streams, and sends off the river Ness




NETHERLANDS, BELGIUM
AND
GRAND DUCHY OF LUXEMBURG
SCALE OF MILES
0 5 10 20 30 40 50
SCALE OF KILOMETERS
0 10 20 40 60 80
Important towns are shown in heavy face type
Railways shown thus
Canals
NORTH SEA
ENGLISH CHANNEL
GERMANY
FRANCE
Longitude East from Greenwich
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to the Moray Firth. It lies in the valley of Glenmore, on the line of the Caledonian Canal, and is inclosed by steep mountains—the highest, Mealfourvonie (2,284 feet). Owing to its great depth (in places 780 feet) it never freezes to any considerable extent.

NESTOR, in Greek legend, son of Neleus and Chloris. His father and 11 brothers were killed by Hercules; but the conqueror spared Nestor's life and placed him on the throne of Pylos. As king of Pylos and Messenia, he led his subjects to the Trojan war, where he distinguished himself among the rest of the Grecian chiefs by eloquence, wisdom, and justice.

NESTOR, a Russian historian; born about 1056, was a monk at Kiev, and wrote a chronicle in his vernacular tongue, which has been the foundation of Slavonic history. He died after 1116.

NESTORIANISM, the doctrine taught by NESTORIUS (*q. v.*), that there were two persons as well as two natures in Jesus Christ, and that the Virgin Mary was in no sense Theotokos, or Mother of God, as she was the mother of the man Jesus and not of the Word. This doctrine was condemned by the Council of Ephesus, convened by Pope Celestine I., in A. D. 431. Nestorius was deposed, and the use of the Nicene Creed made obligatory. Nestorianism made rapid strides in the East. Since 1553 a portion of the Nestorians have been in communion with Rome, and are known as Chaldeans.

NESTORIUS, Bishop of Constantinople (428-431). He incurred the charge of heresy (see NESTORIANISM). Cyril of Alexandria, at the Council of Ephesus in 431, procured the condemnation of the doctrine taught by Nestorius and the deposition of the patriarch. He was banished to the deserts of Egypt, where he suffered much and died in 440.

NET, an open fabric made of thread, twine, or cord, woven into meshes of fixed dimensions, firmly knotted at the intersections. Nets are used for a great variety of purposes, as for protecting fruit trees, for collecting insects, for hammocks, screens, etc., but chiefly for hunting and fishing. The chief kind of nets used in fishing are the trawl, the drift, the seine, the kettle or weir, and the trammel or set nets.

NETHERLANDS, THE, or HOLLAND (Dutch Nederland, or Koninkrijk der Nederlanden), a kingdom of Europe on the North Sea, N. of Belgium and W. of part of northern Germany; area 12,648 square miles; pop. (1917) 6,724,663. The country is divided into 11 provinces: North Brabant, Gelderland, South Holland, North Holland, Zeeland, Utrecht, Friesland, Overijssel, Groningen, Drenthe, and Limburg. The king is also sovereign (grand-duke) of the grand-duchy of Luxemburg. In addition to her European territories Holland possesses extensive colonies and dependencies in the Asiatic archipelago and America; including Java, Sumatra, great part of Borneo, Celebes, part of New Guinea, Surinam or Dutch Guiana, the West Indian islands of Curaçao, Saba, St. Eustatius, etc.; estimated area, about 783,000 square miles; pop. approximately 35,000,000.

General Features.—The Netherlands (or Low Countries, as the name implies) form the most characteristic portion of the great plain of N. and W. Europe. It is the lowest part of this immense level, some portions of it being 16 to 20 feet below the surface of the sea, and nearly all parts too low for natural drainage. The coast line is very irregular, being marked by the great inlet of the Zuider Zee, as well as by various others, and fringed by numerous islands. In great part the coast is so low that were it not for massive sea-dykes large areas would be inundated and lost to the inhabitants. In the interior also dykes are a common feature, being built to protect portions of land from the lakes or rivers, or to enable swampy pieces of land to be reclaimed by draining, the water being commonly pumped up by windmills. These inclosed lands are called "polders," and by the formation of the polders the available area of the country is being constantly increased, lakes and marshes being converted into fertile fields, and considerable areas being even rescued from the sea. One of these reclamations was the Lake of Haarlem, the drainage of which, yielding more than 40,000 acres of good land now inhabited by about 12,000 persons, begun in 1839, was finished in 1852. Almost the only heights are the sand hills, about 100 to 180 feet high, forming a broad sterile band along the coast of South and North Holland; and a chain of low hills, of similar origin perhaps, S. E. of the Zuider Zee. In the same line with the sand hills, extending past the mouth of the Zuider Zee, runs a chain of islands, namely, Texel, Vlieland, Schelling, Ameland, etc., which seem to indicate the original line of the coast before the ocean broke in on the low lands. The coast of Friesland, opposite to these islands, depends for its

security altogether on artificial embankments. The highest elevation, 656 feet, is in the extreme S. E. The general aspect of the country is flat, tame, and uninteresting, and about a fifth of the whole surface consists of marsh, sand, heath, or other unproductive land.

Rivers and Canals.—The chief rivers of the Netherlands are the Rhine, Maas (or Meuse), Scheldt, and Ijssel. The Rhine is above half a mile wide where it enters the Netherlands; it soon divides, the S. and principal arm taking the name of Waal and uniting with the Maas, while the N. arm, communicating with the Ijssel, takes the name of Leck; a branch from it, named the Kromme (crooked) Rhine, winds by Utrecht to the Zuider Zee, while another very diminished stream called the Old Rhine flows from Utrecht by Leyden to the sea at Katwijk. The Maas, entering the Dutch Netherlands from Belgium, receives the Roer; of the Scheldt only the mouths, the E. and the W., or Old Scheldt, lie within the Dutch boundary. The Ijssel, flowing from Germany, enters the Zuider Zee. The navigable canals are collectively more important than the rivers, on which indeed they depend, but they are so numerous as to defy detailed description. The chief are the North Holland canal, between Amsterdam and the Helder, length 46 miles; and the more important ship canal, 15 miles long, 26 feet deep and 197 wide, from the North Sea to Amsterdam, and connected by locks with the Zuider Zee. Lakes are also very numerous.

Climate, Agriculture.—The climate of the Netherlands is humid, changeable, and disagreeable. The mean temperature is not lower than in like latitudes in the British Islands, and the quantity of rain (26 inches) is somewhat less; but the winter is much more severe. As regards rural industries gardening and agriculture have attained a high degree of perfection. Yet the latter holds a subordinate place in rural industry. Wheat, of excellent quality, is grown only in favored portions of the south provinces. Rye, oats, and buckwheat, with horse-beans, beet, madder, and chicory, are more common crops; and tobacco is cultivated in the provinces of Gelderland, South Holland, and Utrecht; flax in North Brabant, South and North Holland, Friesland, and Zeeland; and hemp, sugar-beet, oil-seeds, and hops in various parts of the kingdom. Culinary vegetables are cultivated on a large scale, not merely for the sake of supplying the internal demand, but also for the exportation of the seeds, which form an important article of Dutch commerce. But it is in stock (cattle, horses, sheep, swine, goats), and dairy produce in particular, that the rural industry of the Netherlands shows its strength.

A new system of compiling trade statistics was introduced in 1917, and the latest complete figures available are for that year. The total imports in the calendar year 1917 amounted to 7,472,339 metric tons, valued at $435,000,208. The exports for the same year amounted to 3,321,590 metric tons, valued at $336,673,258. Nearly 25 per cent. of the import trade was with Germany. The largest trade, however, was with the United Kingdom, amounting in value to over $115,000,000. The largest volume of exports went to Germany, $127,325,000. Exports to the United States amounted to $14,735,600, while the imports from the United States amounted to $79,816,300. The chief imports were of gold coin, wheat, cotton yarn, tobacco. The principal exports were margarine and artificial butter, cheese, butter, condensed milk, dried vegetables. There are about 2,400 miles of railway in the country and about 2,000 miles of canals. Vessels entering ports in 1918 numbered 1,779 with a tonnage of 1,663,093. The total national debt in 1919 was 1,650,646,000 guilders. The revenue for the same year was 285,667,443 guilders, while the expenditures amounted to 588,706,724 guilders.

People, Institutions, etc.—The stock to which the people belong is the Teutonic, the great majority of the inhabitants being descendants of the old Batavians. They comprise over 70 per cent. of the population, and are chiefly settled in the provinces of North and South Holland, Zeeland, Utrecht, and Gelderland. The Flemings of North Brabant and Limburg, and the Frisians, inhabiting Friesland, Groningen, Drenthe, and Overijssel, form the other groups. The majority of the people belong to the Dutch Reformed Church (a Presbyterian body); the remainder being Roman Catholics, Old Catholics, Jews, etc. All religious bodies are on a perfect equality. The government is a constitutional monarchy, the executive being vested in the sovereign, and the legislative authority in the states-general, sitting in two chambers. The upper chamber, 50 in number, is elected by the provincial councils or assemblies of the 11 provinces; the lower chamber, 100 in number, is elected directly, the electors being all males of 25 years of age taxed at a certain figure. The members of the lower house are paid.

Elementary schools are everywhere established, and are partly supported by the State, but education is not compulsory. Higher class schools are in all the chief towns; while there are State universities, namely, at Leyden, Utrecht, and Groningen, and the municipal university at Amsterdam. The commercial capital of the country is Amsterdam, but the seat of government and residence of the sovereign is The Hague.

History.—The S. portion of the Low Countries belonged at the beginning of the Christian era to Belgic Gaul (see GAUL). The N. portion, inhabited by the Batavians and Frisians, formed part of Germany. The S. portion as far as the Rhine was held by Rome up to A. D. 400, after which it came under the rule of the Franks, as did also subsequently the rest of the country. In the 11th century the territory comprised in the present kingdoms of Belgium and the Netherlands formed a number of counties, marquisates, and duchies corresponding more or less with the modern provinces. By the latter part of the 15th century all these had been acquired by the Duke of Burgundy, and passed to the house of Hapsburg on the marriage of the daughter of Charles the Bold of Burgundy to the son of the Emperor Frederick III. On the abdication of Charles V. in 1556 they passed to his son Philip II. of Spain. In consequence of religious persecution in 1576 Holland and Zeeland openly rebelled, and in 1579 the five N. provinces—Holland, Zeeland, Utrecht, Guelders, and Friesland—concluded the celebrated Union of Utrecht by which they declared themselves independent of Spain. They were joined in 1580 by Overijssel, and in 1594 by Groningen. After the assassination of William of Orange, July 10, 1584, Maurice became stadtholder (governor). His victories at Nieuport and in Brabant, the bold and victorious exploits of the Dutch admirals against the navy of Philip II., the wars of France and England against Spain, and the apathy of Philip II., caused in 1609 the peace of Antwerp. But Holland had yet to go through the Thirty Years' War before its independence, now recognized by all the powers except Spain, was fully secured by the peace of Westphalia. In the middle of the 17th century the United Netherlands were the first commercial state and the first maritime power in the world, and for a long time maintained the dominion of the sea. The S. provinces alternated between the rule of Spain and Austria till 1797, when they came under the power of the French republic. In 1806 Louis Napoleon became king of Holland, but in 1810 it was incorporated with the French empire. In 1814 all the provinces both of Holland and Belgium were united by the treaty of Paris to form the kingdom of the Netherlands. This arrangement lasted till 1830, when the S. provinces broke away and formed the kingdom of Belgium. King Willem I. attempted to reduce the revolted provinces by force; but the great powers intervened, and finally matters were adjusted between the two countries in 1839. The king abdicated in 1840, and was succeeded by his son Willem II. (1840-1849), he being again succeeded by his son Willem III., who was succeeded in 1890 by his daughter Wilhelmina, Queen Emma reigning as queen-regent till the queen came of age, Aug. 31, 1898. Queen Wilhelmina was married to Duke Henry of Mecklenburg-Schwerin, Feb. 7, 1901.

Probably no neutral country played a more difficult rôle in the World War than did the Netherlands. During the first weeks of the German invasion of Belgium thousands of Belgian refugees went across the border and it was necessary to give them hospitality throughout the period of the war. The number steadily increased as Belgians found an opportunity to cross the border. At the outbreak of the war the boundary of the Netherlands was mobilized and throughout the entire period of the hostilities the army was in a constant state of preparation. Although sorely pressed by both sides by economic and other measures, Holland never seriously contemplated abandoning her neutrality. Dutch ships played a large part in the carrying trade during the war, especially between America and Europe. On March 14, 1918, the United States and British governments notified the Dutch government that they proposed to take over all the Dutch ships in their ports, compensation to be made and the ships to be returned after the war. Holland had already delayed for many months in accepting various proposals made by the two governments and during this period hundreds of Dutch ships remained idle in American and British ports. Holland was prepared to make an agreement, but Germany threatened the destruction of every Dutch ship if the agreement was made. The seizure of the ships was made without trouble. Dutch crews were replaced by American and British. Although some public protest was made in Holland, there were no serious complications.

On the day following the armistice

which ended hostilities, the German emperor arrived at Eysden on the Dutch frontier, and he with a number of followers were permitted to enter Holland. After some delays the former emperor was given refuge at the castle of Count Bentick at Amerongen. Here he remained until May, 1920, when he removed to the castle of Doorn, which he had purchased. The German crown prince took refuge on the island of Wieringen, where he remained with one or two companions. Following the ratification of the treaty of Versailles, formal attempt was made upon the Dutch government to give up the former emperor, but this was steadily refused. It was generally considered that the demand was more or less of a formality.

Holland quickly took advantage of the conditions following the close of the war and re-established commercial relations with Germany.

NETTLE, a genus of plants (*Urtīca*) belonging to the natural order *Urticaceæ*, and consisting chiefly of neglected weeds, having opposite or alternate leaves, and inconspicuous flowers, which are disposed in axillary racemes. The species are mostly herbaceous, and are usually covered with extremely fine, sharp, tubular hairs, placed on minute vesicles filled with an acrid and caustic fluid, which by pressure is injected into the wounds caused by the sharp-pointed hairs.

NETTLERASH, or URTICARIA, the term applied to a common form of eruption on the skin. The eruption consists of wheals, or little solid eminences of irregular outline, and either white or red, or most commonly both red and white, there being a white center with a red margin. The rash is accompanied with great heat, itching, and irritation, but is always aggravated by scratching; the appearance on the skin and the sensation being very much like the appearance and feeling produced by the stinging of nettles; and hence the origin of its names.

NETTLE TREE (*Celtis*), natural order *Urticaceæ*, a deciduous tree, with simple and generally serrated leaves, much resembling those of the common nettle, but not stinging. It has a sweet fleshy drupaceous fruit.

NEUFCHÂTEL, or **NEUCHÂTEL** (nuh-chä-tel) (in German Neuenburg), a Swiss canton, bounded by France, Vaud, the Lake of Neufchâtel, and Bern, having an area of 312 square miles. Neufchâtel was an independent principality as early as 1034. After various vicissitudes it came into the hands of the King of Prussia, as heir of the house of Orange. In 1814 it was received into the Swiss Confederacy, and was the only canton with a monarchical government. This it preserved till 1848. After threatened war in May, 1857, the King of Prussia renounced all his rights in Neufchâtel. Several ridges of the Jura run through the country. The Lake of Neufchâtel, 24 miles long by 8 broad, communicates through the Aar with the Rhine. Grazing and dairy farming are extensively carried on in the canton; wine, fruits, hemp, and flax are produced. The chief manufactures are lace, cotton, watches and clocks (specially at Chaux de Fonds, Neufchâtel, and Locle). The religion is Protestant. The language is French, but German is also spoken. Pop. about 150,000. The capital, of the same name, is 24 miles W. of Bern, on a steep slope above the N. W. shore of Lake Neufchâtel. It has an old Gothic church of the 12th century; many charitable institutions; a gymnasium or college, containing a valuable natural history collection founded by Professor Agassiz, a native of the town, etc. It has various manufactures and an extensive trade. Pop. about 25,000.

NEUILLY (nuh-yē), or **NEUILLY-SUR-SEINE**, a town of France; department of Seine; immediately N. of the Bois de Boulogne, and practically a suburb of Paris. Here, near the Seine, and in a large and beautiful park, formerly stood the Château de Neuilly, built by Louis XV., and the favorite residence of Louis Philippe, which was burned at the revolution in 1848. When Louis Philippe took refuge in England he assumed the title of Count de Neuilly. Pop. about 45,000.

NEURALGIA, severe pain produced by irritation of a nerve, or by sympathetic action with inflammation of surrounding parts; a disease chiefly of debility, overwork, and general depression. When it occurs in the head it is called tic-doloreux, in the breast *angina pectoris*, and in the chest-wall, intercostal neuralgia. Bromide of potassium, strychnine, arsenic, quinine, and tonic treatment generally are indicated in this disease.

NEURASTHENIA, a disease of the nerves caused by prolonged grief or anxiety, serious shock or anything which exhausts the reserves of nervous strength. The disease most frequently attacks persons below 40 years of age,

but it is not necessarily confined to them. The symptoms are headache, mental depression, and gastro-intestinal distress. In the latter stages of the disease cardiac palpitation, feebleness of circulation, and nervous indigestion appear. On the mental side the weakness of the nerves causes loss of memory, while the attempt to concentrate causes painful headaches and complete exhaustion. Sleep is broken and unrefreshing, and the patient suffers almost as much from imaginary as from genuine distresses. Neurasthenia is a disease which comes slowly and has a protractel course, the patient never being brought to complete recovery. The best remedy to cause a cessation of some of the symptoms is complete rest and freedom from worry. In many cases the patient is forced to change his occupation and an entire change of scene is often beneficial. Much is dependent on the mental attitude of the patient toward the doctor, as complete confidence in the doctor is essential to recovery.

NEURITIS, a term applied to inflammation of the nerves. The symptoms are those of neuralgia, with impairment of sensation, or localized paralysis, according as sensory or motor nerves are affected.

NEUROPTERA, in entomology, an order of the class Insecta, in which the older entomologists included all insects possessing four membranous wings, more or less elaborately veined, but without the peculiar arrangement of cells which occurs in the Hymenoptera.

NEUROSIS, a name common to diseases of the nervous system unaccompanied by any discoverable alteration in structure, that is to say, functional diseases of the nervous system. Hysteria, for example, is a neurosis; catalepsy, some forms of mental disease, such as melancholia, various forms of neuralgia and spasm, are called neuroses.

NEUROTIC, a term introduced into medicine to indicate some relationship to the nervous system. Thus a neurotic disease is a nervous disease. Medicines that affect the nervous system, as opium, strychnine, etc., are called neurotics.

NEUSS (nois), an ancient manufacturing town of Germany, near the left bank of the Rhine, 4 miles W. of Düsseldorf. Its church of St. Quirinus, a notable specimen of the transition from the Round to the Pointed style, was founded in 1209. Neuss has flourishing ironworks, foundries, flour and iron mills, and manufactures of cottons, woolens, leather, paper, chemicals, etc. Pop. about 40,000.

NEUSTADT, or WIENER-NEUSTADT, a town of Austria; 32 miles S. of Vienna. It is overlooked by the large old castle of the Dukes of Babenberg, now a military academy. The castle contains a fine Gothic chapel (1460) rich in painted windows; and is the burial-place of the Emperor Maximilian I. Prior to the World War locomotives and machinery, wire, bells, pottery, starch, leather, and ribbons were among the manufactures. The city, called "the Ever-faithful," was founded in 1192, and was rebuilt after a great fire in 1834. Pop. about 40,000.

NEUSTRIA (noies'-), **or WEST FRANCE**, the name given in the times of the Merovingians and Carlovingians to the W. portion of the Frank empire, after the quadruple division of it which took place in 511. Neustria contained three of these divisions. It extended originally from the mouth of the Scheldt to the Loire, and was bounded by Aquitania on the S., and by Burgundy and Austrasia on the E. The principal cities were Soissons, Paris, Orleans, and Tours. Bretagne was always loosely attached to Neustria, of which the strength lay in the duchy of France. After the cession of the territory afterward called Normandy to the Normans in 912, the name Neustria soon fell into disuse.

NEUTER, in botany, a flower having neither stamens nor pistils; as in those occupying the outermost flowers of the head of *Centaurea cyanus*, the margin of the cymes in garlen plants of Viburnum, Hydrangea, or in the whole cyme of *Viburnum opulus*. In grammar, a noun of neuter gender. In entomology, a sterile female, a worker.

NEUTRALITY, in chemistry, possessing the neutral condition.

In international law, that condition or attitude of a country or state in which it does not take part, directly or indirectly, in a war between other countries. A neutral state is allowed to supply to either of the belligerents any supplies or stores which are not contraband of war. It may also enter into treaties or engagements with either side, provided such treaties or engagements are unconnected with the subject of the war. Armed neutrality, the state of a country or nation which holds itself armed in readiness to resist any aggression of either of the belligerents between whom it is neutral. See BELLIGERENT.

NEUTRAL TINT, a dull grayish hue, having the character of none of the

brilliant colors, such as red, yellow, blue, etc.

NEUWIED (noi-wĭd), a town of Germany, on the right bank of the Rhine, 8 miles below Coblenz; formerly capital of the principality of Wied. The castle of the princes has a beautiful garden, in which are many Roman antiquities unearthed in the vicinity. The town contains an important institute of the Moravian Brethren, and there are some minor manufactures. Pop. about 20,000.

NEVA, a river of Russia, flowing W. from Lake Ladoga to the Bay of Cronstadt, in the Gulf of Finland. It passes through St. Petersburg, and carries to the sea an enormous volume of water (greater than that of the Rhine) from the lakes Ladoga, Onega, Ilmen, and others. Its total length, with windings, is about 40 miles; in places it is over 4,000 feet wide, elsewhere the channel is narrowed to 180 feet; and in one or two places the navigation is embarrassed by reefs and rapids. It is frozen on an average from Nov. 25 to April 21. By the Ladoga canal the Neva communicates with the vast water system of the Volga, and thus it may be said to join the Baltic with the Caspian Sea.

NEVADA, a State in the Western Division of the North American Union; bounded by Oregon, Idaho, Utah, Arizona, and California; admitted to the Union, Oct. 31, 1864; counties, 17; capital, Carson City; area, 107,740 square miles; pop. (1890) 45,761; (1900) 42,335; (1910) 81,875; (1920) 77,407.

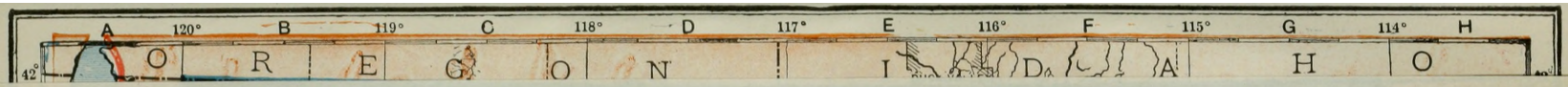
Topography.—The State is situated in the Great American Basin, having for its boundaries the Sierra Nevada Mountains on the W., the Wahsatch Mountains on the E., and cross ranges on the N. and S. It is a table-land 4,000 to 8,000 feet above sea-level. The State is crossed by a series of parallel mountain ranges with a general N. and S. direction. The principal chains are the Virginia Mountains, the Truckee Mountains, Antelope, East Humboldt, Toyabe and Santa Rosa Mountains. Between these mountains are deep valleys; the Colorado valley having numerous abrupt ranges, and peaks rising above its plateaus. The most important ranges of the Colorado region are the Muddy, Vegas, Spring Mountain, and Kingston Mountains. There are numerous lakes, the rivers having no outlet over the mountains. The largest lakes include Winnemucca, Und, and Pyramid lakes in the extreme W., Carson Lake and Humboldt and Carson Sink, E. of the W. Humboldt Mountains, and Eagle, Franklin, and Ruby lakes in the N. E. The Humboldt river crosses the N. part of the State and empties into Humboldt Lake. The Truckee river rises in Tahoe Lake, and flows S. into Pyramid Lake. Other important rivers are the Rio Virgin, Carson, Quinn's river, Reese river, and the Colorado river, which forms a large part of the S. E. boundary.

Geology.—The mountains of Nevada show formations of nearly every epoch, from the Azoic to the late Jurassic. The volcanic nature of the State is shown by the ancient and modern eruptive rocks, and by the lava beds of the N. W. The mountain ranges are in places composed entirely of limestone, in others of granite, syenite, porphyry, slate, or quartzite.

Mineralogy.—Nevada is rich in minerals, though, excepting silver and gold, they have been worked but little. The Comstock silver lode, discovered in 1859, was for years the most valuable in the world. Important new discoveries of gold and silver mines were made in 1910 and in the following years. This resulted in a greatly increased production of these minerals of the State. The copper production has also greatly increased in recent years. The gold production in 1918 was 322,776 fine ounces, valued at $6,662,000. In the same year there were produced 10,113,405 fine ounces of silver, valued at $10,113,405. Copper production in 1918 was 106,266,603 pounds. Nevada ranks fourth among the States in the production of this metal. There is also a considerable production of lead.

Other minerals mined included tungsten, antimony, platinum, zinc, cinnabar, tin, manganese, plumbago, nickel, cobalt, and iron. Beds of sulphur, gypsum, rock salt, borax, saltpeter, and carbonate of soda are extensive. The building stones include limestone, granite, slate, sandstone, agate, and marble. Amethysts, carnelians, and tourmalines are also found.

Soil and Productions.—With the exceptions of the river valleys there is scarcely any arable land in the State. The valleys and basins however are well watered and adapted to agricultural pursuits, and under proper irrigation considerable mountain land has been made productive. The principal crops are hay, wheat, oats, and barley. The figures for agricultural production in 1919 were as follows: oats, 384,000 bushels, valued at $384,000; barley, 420,000 bushels, valued at $630,000; wheat, 668,000 bushels, valued at $1,429,000; hay, 526,000 tons, valued at $10,310,000; potatoes, 900,000 bushels, valued at $1,350,000. The forest trees are chiefly pines, firs, and spruces, of great size. The foothills


A
120°
B
119°
C
118°
D
117°
E
116°
F
115°
G
114°
H
42°
OREGON
IDAHO



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Photo, Brown & Dawson

THE CANON BELOW TOWER FALLS, YELLOWSTONE NATIONAL PARK

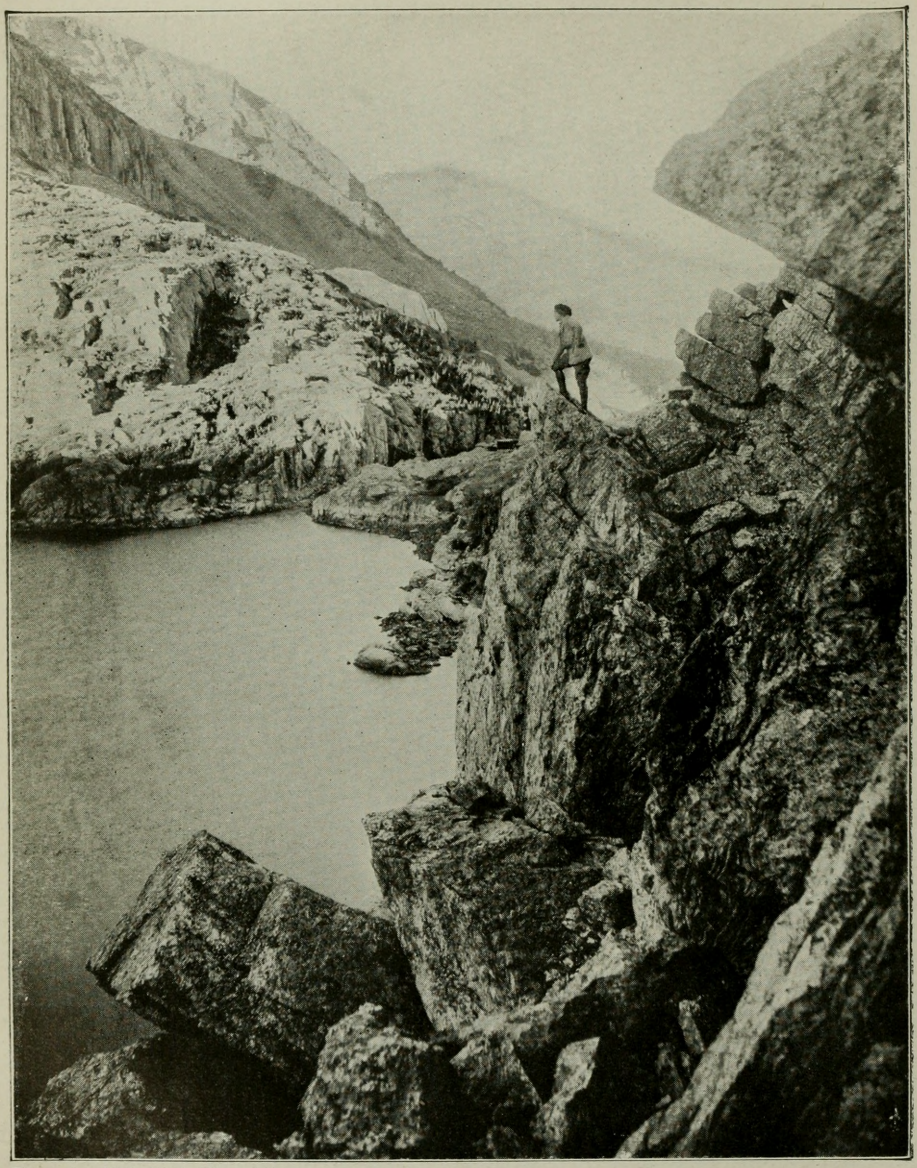


Photo by Mile High Photo. Corp.

BLUEBIRD LAKE, ROCKY MOUNTAIN NATIONAL PARK, COLORADO



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YOSEMITE FALLS IN THE YOSEMITE NATIONAL PARK, CALIFORNIA

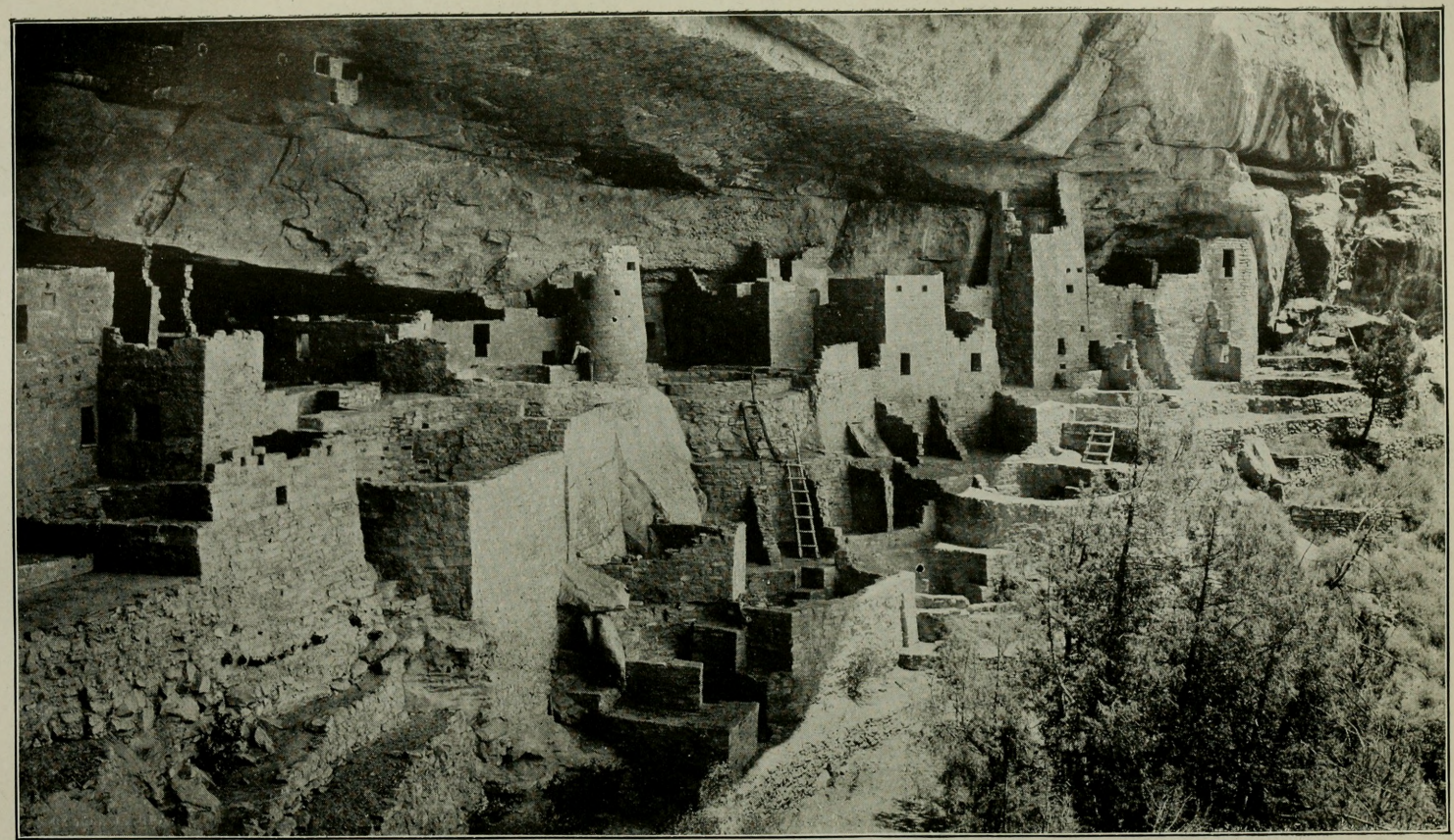


A GLACIER ON MT. RAINIER, MT. RAINIER NATIONAL PARK, STATE OF WASHINGTON



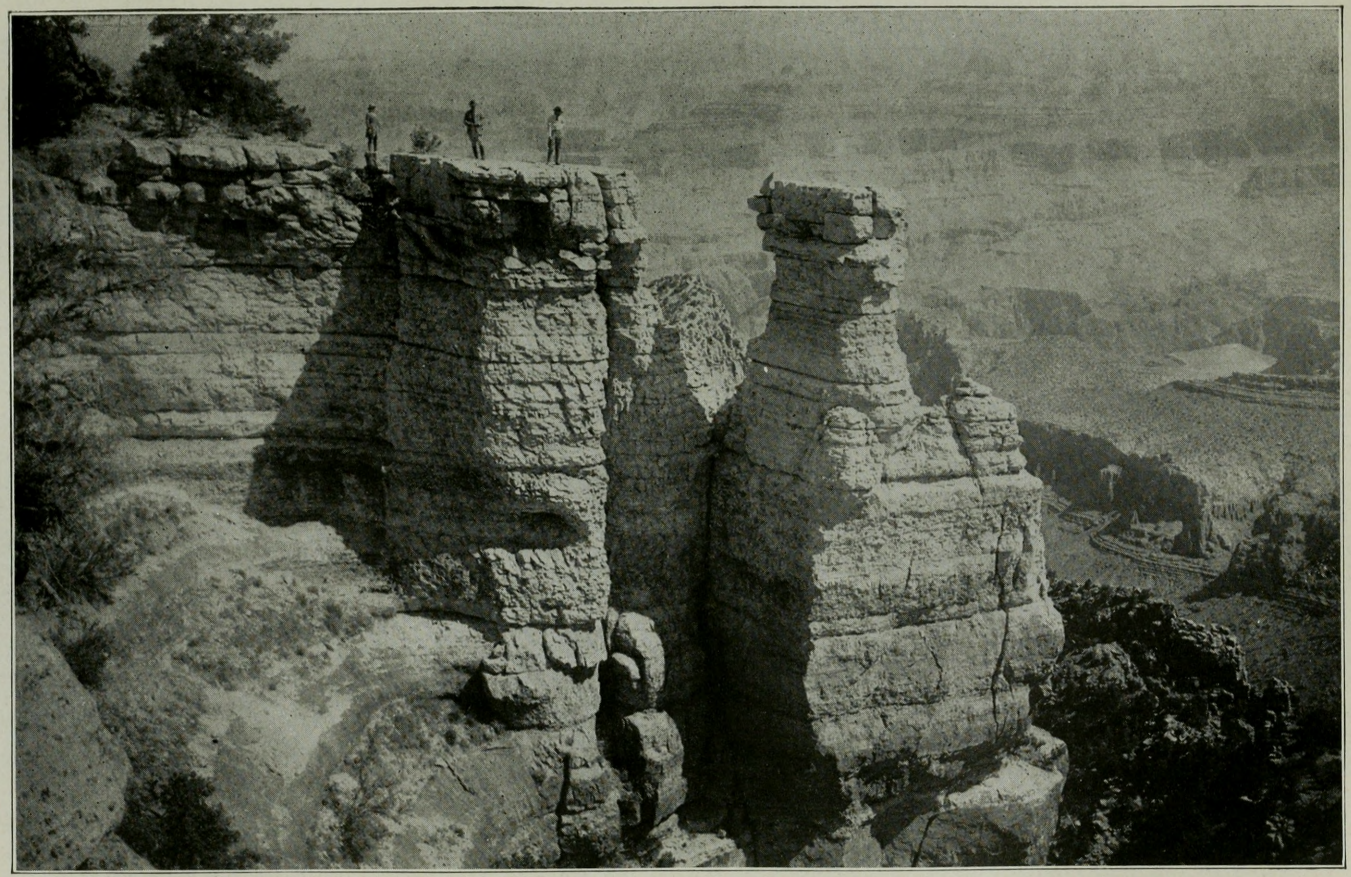
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CLIMBING THE BLACKFOOT GLACIER, IN GLACIER NATIONAL PARK, MONTANA



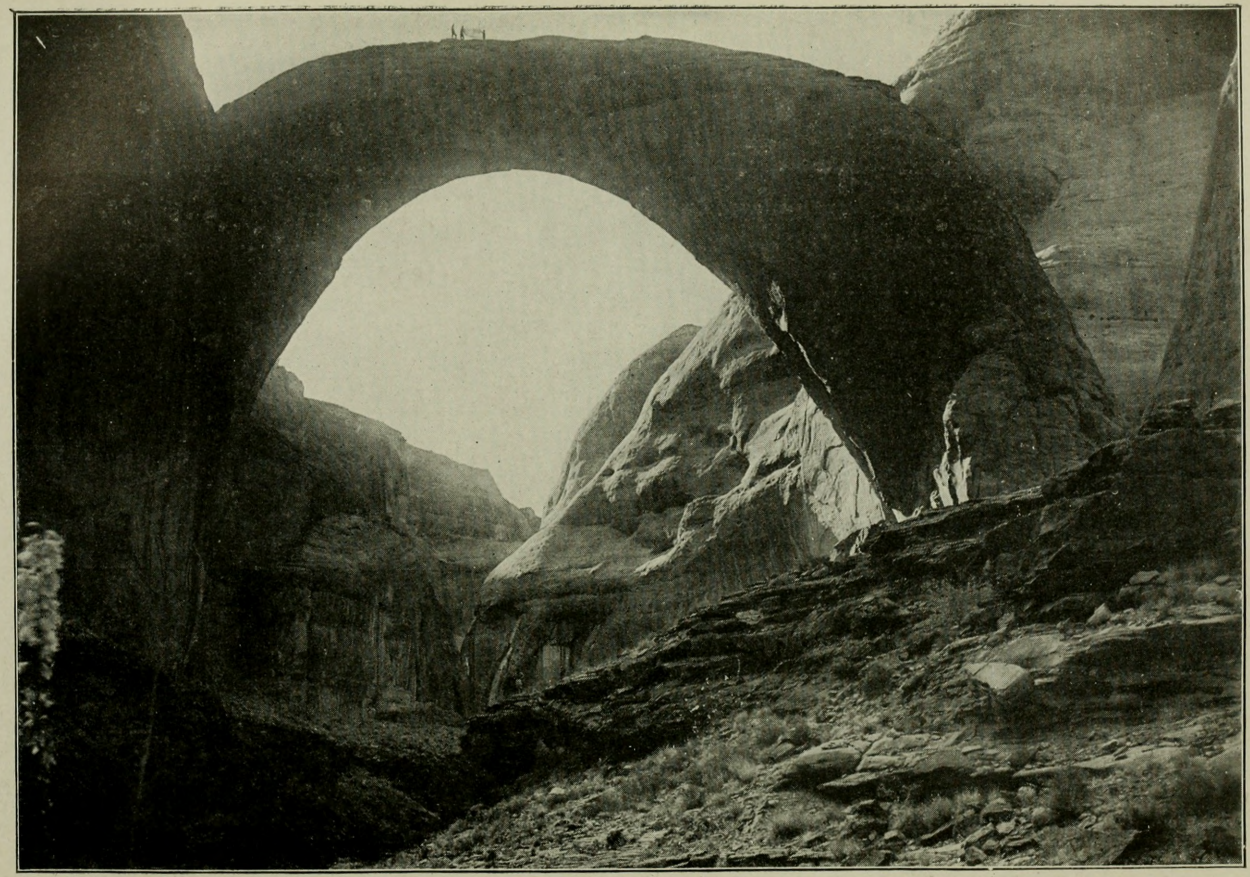
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CLIFF PALACE IN MESA VERDE NATIONAL PARK, SOUTHWESTERN COLORADO



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YELLOW AND WHITE CLIFFS IN THE GRAND CANON OF ARIZONA



© E. M. Newman

THE GREAT RAINBOW BRIDGE, A NATURAL BRIDGE IN UTAH

are covered with mountain mahogany, dwarf cedar, willow, beech, cottonwood, and wild cherry. Apple, peach, pear, and plum trees flourish and bear excellent fruit. Stock raising and dairy farming are leading industries.

Manufactures.—The State has not been developed along manufacturing lines to any considerable extent. There were, in 1914, 180 manufacturing establishments, employing about 3,655 wage earners. The capital invested amounted to $13,591,000 and the wages paid to $3,578,000. The value of the materials used was $9,317,000 and the value of the finished product amounted to $16,083,000. The principal articles of manufacture include railroad cars, dairy products, flour and grist, printed material, saddlery and harness, clothing, chemicals, boots and shoes, brick and tile, wagons and carriages, confectionery, lumber and timber products, and salt.

Banking.—On Oct. 31, 1919, there were ten National banks in operation, having $1,435,000 in capital, $1,583,379 in outstanding circulation, and $1,216,510 in United States bonds. There were also 23 State banks, with $1,678,000 in capital and $401,000 surplus.

Education.—There was a school population in 1918 of 14,441 and an average daily attendance of 11,014. The total expenditures for educational purposes amounted to $504,474. For higher education there were public high schools at Austin, Carson City, Elko, Eureka, Gold Hill, Reno, and Virginia City, and the State University of Nevada at Reno.

Churches.—The strongest denominations in the State are the Roman Catholic; Protestant Episcopal; Mormons; Methodist Episcopal; and Presbyterian.

Finances.—The total receipts for the fiscal year 1919 amounted to $2,174,188 and the disbursements to $2,245,764. The largest expenditures were for schools, highways and administration. The State debt amounts to about $717,000.

Transportation.—The total railway mileage in 1919 was 2,483. The roads having the longest mileage were the Southern Pacific and the Western Pacific.

State Government.—The governor is elected for a term of four years. Legislative sessions are held biennially. The Legislature had 17 members in the Senate and 37 members in the House. There is one Representative in Congress.

History.—Nevada is part of the territory acquired by the United States from Mexico, by the treaty of Guadalupe Hidalgo. The first immigrants were the Mormons, who located in the Carson and Washoe valleys in 1848. The discovery of gold in California in the following year brought more settlers, and the discovery of silver still added to Nevada's growth. It was organized as a Territory March 2, 1861, and admitted to the Union in 1864. In 1866 its area was increased to the present size by the addition of parts of Arizona and Utah.

NEVADA, a city of Missouri, the county-seat of Vernon co., 103 miles S. of Kansas City, and is situated on the Missouri Pacific, and the Missouri, Kansas and Texas railroads. Within its limits are several important mineral springs. It contains a Roman Catholic convent school, a State hospital for the insane and several other public and semi-public institutions. It is the center of an important agricultural and stock-raising industry. It has zinc smelters, iron works, flour and lumber mills. Pop. (1910) 7,175; (1920) 7,139.

NEVADA, UNIVERSITY OF, a coeducational, non-sectarian institution at Reno. The following statistics were compiled at the close of 1919: Professors and instructors, 48; students, 379; volumes in the library, 40,000; production funds, $305,737; number of graduates, 586; president, W. E. Clark, Ph. D.

NEVERS (nē-ver'), the capital of the French department of Nièvre, formerly of the province of Nivernais. It is picturesquely seated on a hillside, 600 feet above sea-level, at the influx of the Nièvre to the Loire, 159 miles S. S. E. of Paris. The Noviodunum of Cæsar, it has been the seat of a bishop since 506; its beautiful cathedral, restored in 1879, belongs mainly to the 13th century. The stately court house, dating from 1475, was formerly the castle of the Dukes of Nevers. The city contains a fine public garden, a bridge of 14 arches over the Loire, a medieval gateway, and a triumphal arch (1746) commemorating Fontenoy. The industries comprise the manufacture of cannon, iron cables and chains, porcelain (introduced by Italians about 1565). Pop. about 28,000.

NEVIN, ETHELBERT, an American composer and brother of A. F. Nevin. Born at Edgeworth, Pa., 1862. Studied music, first under local teachers and afterward in Berlin under Von Bülow and Karl Klindworth. He returned to America in 1887, making his home in Boston, where he produced many musical compositions. After 1893 he traveled in Europe, but spent most of his time in Paris and southern France. Returned to the United States in 1901, and was associated with Professor Parker in the department of music of Yale University. His songs and instrumental pieces are distinguished

for their delicate charm. He died in New Haven in 1901.

NEVIS, an island of the West Indies, belonging to Great Britain. It forms one of the Leeward Islands, and is 2 miles S. E. of St. Christopher, with which it has been since 1882 administratively connected. It is circular in form, rises in the center to a wooded ancient crater (3,200 feet), and has an area of 50 square miles. The lower slopes are cultivated, the sugar-cane being the principal crop, though limes and oranges are grown to a small extent. The capital is the port of Charlestown. Nevis was discovered by Columbus in 1498 and colonized by England in 1628. In the 18th century it was twice taken and restored by the French. Pop. about 13,000.

NEW, HARRY STEWART, United States Senator from Indiana. Born at Indianapolis, Dec. 31, 1858. From 1878-1903 he served with the "Indianapolis Journal," beginning as a reporter and ending as part owner. In 1898 he served as a captain in the American Army in the Spanish-American War. In 1896 he was elected a member of the Indiana State senate. From 1900 to 1912 he was a member of the Republican National Committee, being chairman in 1907-1908. Elected United States Senator for the term 1917-1923.

NEW ALBANY, a city and county-seat of Floyd co., Ind.; on the Ohio river, and on the Baltimore and Ohio Southwestern, the Pittsburgh, Chicago, Cincinnati and St. Louis, the Southern, and the Chicago, Indianapolis and Louisville railroads; opposite Louisville, Ky. A bridge connects the city with Louisville. Here are the court house, hospital, library, National and State banks, street railroads, electric lights, and several daily and weekly newspapers. The city has manufactories of engines, automobiles, cars, and boilers, planing, rolling, and flour mills, pork-packing houses, iron foundries, shipyards, and plate-glass works. Pop. (1910) 20,629; (1920) 22,992.

NEW AMSTERDAM, the name conferred on the present city of New York by its original Dutch settlers.

NEWARK, the largest city of New Jersey, and the county-seat of Essex co. It is on Newark Bay and extends to the mouth of the Passaic river. It is on the Pennsylvania, the Lehigh Valley, Central of New Jersey, Lackawanna, and the Erie railroads. The city has an area of about 24 miles. Surrounding it are a number of smaller suburban communities, including Belleville, Bloomfield, Montclair, the Oranges, Harrison, Irvington, and others. These are all connected with the city by trolley and steam railway lines. The city is pre-eminently a manufacturing center. There were in 1920 over 2,300 manufacturing establishments. The total capital invested in manufacturing was over $275,000,000. There were nearly 125,000 operatives employed. The total value of the raw material used in 1918 was $230,000,000 and the value of the finished product was $375,000,000. There were over 250 distinct lines of manufacture represented. In 1910 Newark ranked eleventh in the cities of the United States and in aggregate value of manufactured products. It is the chief city for the manufacture of fine jewelry in the United States. It produces the largest and best grades of leather for shoes, carriages, and upholstery. The first malleable iron produced was manufactured in Newark. Among the chief manufactures in addition to those mentioned are cut glass, celluloid, patent leather, chemicals, paints and varnish, and foundry products.

Newark is a great insurance center. It has three large important insurance companies, which had a total income in 1918 of $252,542,844. There were in 1918 nine National banks, one city bank, 10 trust companies, 5 savings institutions. There were over 150,000 depositors in the savings banks. The total bank clearings in 1918 amounted to $950,000,000. There are 28 city banks and 6 county banks within the city limits.

It has an excellent system of public schools. There were in 1918 67 of these. The value of school property was about $12,000,000. The number of pupils enrolled in the schools constituted 75,000. In addition there were 26 parish schools and 7 private schools. The water supply of the city is taken from the Pequanac river in the north Jersey hills. There are excellent hospital facilities in the city. Among the notable buildings are the home buildings of the life and fire insurance companies, banks, city buildings and a large number of handsome private residences. Newark is administered by the commission form of government which was brought about by referendum on Oct. 9, 1917. The city was first settled in 1666 by a number of Congregationalists from Connecticut. Pop. (1910) 347,469; (1920) 414,524.

NEWARK, a village of New York in Wayne co., 30 miles S. E. of Rochester. It is situated on the State barge canal and on the New York Central, West Shore, and Pennsylvania railroads. It

is the center of a productive agricultural region. Its chief industries are fruit preserving and nursery products. There are also manufactories of paper boxes, wagons, automobile wheels, etc. It contains a public library and a State Asylum for Feeble-Minded. Newark was the home of the Fox sisters, from whose performances grew modern spiritualism. Pop. (1910) 6,227; (1920) 6,964.

NEWARK, a city and county-seat of Licking co., O.; at the junction of three branches of the Licking river, on the Ohio canal, and on the Pittsburgh, Cincinnati, Chicago, and St. Louis, the Baltimore and Ohio and electric railroads; 33 miles N. E. of Columbus. In the vicinity are petroleum refineries, coal mines, and sandstone quarries. The city contains railroad car shops, machine, stove, boiler, and other industrial plants, and glass works. Pop. (1910) 25,404; (1920) 26,718.

NEWARK-UPON-TRENT, a town of Nottinghamshire, England, on a branch of the Trent; 18 miles N. E. of Nottingham and 120 N. by W. of London. It has a fine parish church, built mainly between 1350 and 1480. Newark has an important corn market and great malting industries, besides iron and brass foundries, manufactures of boilers and agricultural implements and plaster of paris works. A British town and Roman station, Newark in Saxon times became the seat of a castle, which was rebuilt in 1125 by Alexander, Bishop of Lincoln (hence the name New Wark), and which long bore the name of the "key of the North." King John died in it (1216); and in the Great Rebellion it stood three sieges. In 1646 it was dismantled, and is now represented only by a picturesque ruin. Pop. about 17,500.

NEW BEDFORD, a city, port of entry, and one of the county-seats of Bristol co., Mass.; on Buzzards Bay, and on the New York, New Haven, and Hartford railroad; 55 miles S. of Boston. It contains a custom house, county court house, public library, parks, hospitals, and an excellent school system, National and savings banks, waterworks, electric lights, electric street railroads, and daily and weekly newspapers. New Bedford is one of the leading cities in the United States as an industrial center. The city ranks first in the United States in the manufacture of fine cotton goods and fine cotton yarns. The number of cotton-mill employees in 1920 was about 38,000. There was over $6,000,000 invested in other industries, including a rope factory, a copper rolling mill, one of the largest twist drill plants in the world, a large cut glass works, a shoe factory, a paint mill, and numerous other smaller industries. A large pier, costing over $450,000, has been built by the State. The British destroyed a large part of New Bedford in 1778, in retaliation for the injury done to British commerce by privateers from that port. Pop. (1910) 96,652; (1920) 121,217.

NEWBERN, a city, port of entry, and county-seat of Craven co., N. C.; at the junction of the Neuse and Trent rivers; and on the Atlantic Coast Line and the Norfolk Southern railroads; 108 miles E. S. E. of Raleigh. It has steamship communication with Norfolk, Baltimore, and New York. Here are a public library, and several National and State banks. The city exports fish, cotton, turpentine, lumber, vegetables, and naval stores. It has grist and sawmills, turpentine distilleries, carriage and tobacco factories, manufactories of agricultural implements, etc. During the early part of the Civil War Newbern was strongly fortified by the Confederates, but on March 14, 1862, it fell into the hands of General Burnside, after a sharp action. Pop. (1910) 9,901; (1920) 12,198.

NEWBERRY, a city of South Carolina, the county-seat of the county of the same name. It is 43 miles W. N. W. of Columbia and is situated on the Columbia, Newberry and Laurens, and Southern railroads. It is the center of an important cotton-growing region and has important manufactures of cotton goods, cottonseed oil, fertilizers, etc. The town contains an excellent city hall and court house and the Newberry College. Pop. (1910) 5,028; (1920) 5,894.

NEWBERRY COLLEGE, a coeducational institution in Newberry, S. C.; founded in 1856 under the auspices of the Lutheran Church; reported at the close of 1919: Professors and instructors, 9; students, 219; volumes in the library, 8,000; productive funds, $150,000; endowment, $200,000; income, $30,000.

NEWBERRY, TRUMAN HANDY, United States Senator from Michigan. Born in Detroit, Nov. 5, 1864, and graduated from Yale University in 1885. In the same year he became the General Freight and Passenger Agent of the Detroit, Bay City and Alpena railway. Later he became constructing engineer for many large Michigan firms, and served as president or director of many of them. He took a great interest in the Navy and served in it during the Span-

ish-American War. In 1905 he became Assistant Secretary of the Navy and later, for a brief period at the close of Roosevelt's administration, Secretary of the Navy. In 1919 he was elected United States Senator on the Republican ticket against Henry Ford, his Democratic antagonist. Charges of bribery were made by Mr. Ford, and in 1920 a Michigan jury convicted Newberry of having obtained his seat by unlawful methods. The verdict was reversed, and he took his seat.

NEWBOLT, SIR HENRY JOHN, English poet and author. Born at Bilston, Staffordshire, in 1862. Educated at Clifton College, Bristol, and Corpus Christi, Oxford. Was called to the bar in 1887, and practiced law until 1889. Edited the "London Monthly Review," 1900-1904. His most celebrated poems dealing with martial valor and the sea are to be found in "Admirals All" (1897), and "The Island Race" (1898). He has also published a novel "Taken from the Enemy" (1892); "Mordred," a tragedy; "Stories from Froissart" (1899); "Froissart in Britain" (1900); "The Old Country," romance (1906); "The New June" (1909); "Poems Old and New" (1912); "Book of Blue Seas" (1914); and "The Book of the Long Trail" (1919).

NEW BRIGHTON, a borough of Pennsylvania in Beaver co., 28 miles N. W. of Pittsburgh. It is situated on the Beaver river, and Pittsburgh and Lake Erie, and Pennsylvania railroads. It is an important agricultural center and has manufactures of pottery, brick, glass, wall paper, steel products, etc. It contains a Home for the Aged, Children's Home, a hospital, libraries and a public park. Pop. (1910) 8,329; (1920) 9,361.

NEW BRITAIN, a city in Hartford co., Conn.; on the New York, New Haven, and Hartford railroad; 10 miles S. W. of Hartford. Here are a high school, State Normal School, public library, technical school, New Britain Institute, hospital, electric lights, street railroads, waterworks on the gravity system, daily and weekly newspapers, and several National banks. It has manufactories of hardware, in which it ranks first in the United States, electrical supplies, hosiery, cutlery, gas and water motors, steam engines and boilers, bolts and hinges, malleable castings, plain and fancy locks, machine needles, brick, edge tools, wood screws, etc. The assessed property valuation exceeds $58,000,000. Pop. (1910) 43,916; (1920) 59,316.

NEW BRUNSWICK, a Province of the Dominion of Canada, on the E. coast of North America; bounded W. by the State of Maine; N. W. by the Province of Quebec; N. by Chaleur Bay; E. by the Gulf of St. Lawrence and Northumberland Strait, the latter separating it from Prince Edward Island; and S. by the Bay of Fundy and part of Nova Scotia; area, 27,985 square miles; pop. (1916) 351,889.

The coast line is interrupted only at the point of junction with Nova Scotia, where an isthmus of not more than 14 miles in breadth connects the two territories, and separates Northumberland Strait from the Bay of Fundy. The general surface of the country is level, but hilly in the N. W. The principal rivers are the St. John, 450 miles in length, and navigable for vessels of 100 tons to Fredericton, 90 miles from its entrance into the Bay of Fundy; and the Miramichi, 225 miles in length, which falls into the bay of the same name, and is navigable for large vessels 25 miles from the gulf. There are a number of lakes, the largest, Grand Lake, being 25 miles long by about 5 miles broad. Coal is plentiful, and iron ore abundant; the former is said to extend over 10,000 square miles or above one-third of the whole area. The climate, like that of other portions of Canada, is subject to extremes of heat and cold, but is, on the whole, healthful. After agriculture, lumbering and fishing are the main occupations of the inhabitants, though many are engaged in mining and manufacturing. A very large portion of the soil is adapted for agriculture, but only a small part is developed. Cereals are largely grown and the fruit industry is important. Great attention is given to the improvement of live stock. The production of the principal crops in 1918 was: wheat, 1,050,000 bushels; oats, 7,855,000 bushels; buckwheat, 1,793,000 bushels.

New Brunswick is one of the most amply wooded countries in the world, and the forests supply three-fourths of the total exports. The fisheries are very valuable. In 1918 they yielded over $6,300,000. The minerals exported include coal, gypsum, antimony ore, copper ore, manganese, plumbago, and unwrought stone.

Manufactures.—In 1917 there were 1,423 establishments, with a capital of $65,539,370, 18,668 employees, and a product valued at $62,417,466. There were 255 lumber mills with a product valued at $14,426,922.

The Province is divided into 15 counties, and is administered by a lieutenant-governor, an executive council con-



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QUEBEC
MAGDALEN ISLANDS (Fr. Iles de la Madeleine)
St. John's
SCALE OF STATUTE MILES
SCALE OF KILOMETERS
65° Longitude West from Greenwich
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sisting of seven members, a legislative council of 18 members appointed for life, and a Legislative Assembly. The Province has 10 seats in the Dominion Senate and 16 in the House of Commons. Religion is abundantly provided for, as is education, both high and elementary. The latter is free, but not compulsory. New Brunswick was discovered by Sebastian Cabot in 1498; it formed, with Nova Scotia, the French colony of Acadia (1604-1713); was twice ceded to the British (1713 and 1763); received Tory settlers from the United States at the close of the Revolution; was erected into a separate Province in 1786; was granted responsible government in 1848; and in 1867 became an original Province of the Dominion of Canada. The capital is Fredericton, but the chief commercial center is St. John (pop. about 65,000), which has one of the finest harbors on the North Atlantic.

NEW BRUNSWICK, a city and county-seat of Middlesex co., N. J.; on the Raritan river, the Delaware and Raritan Canal, and the Pennsylvania railroad; 32 miles S. of New York. Here are Rutger's College (Reformed), Theological Seminary of the Reformed Church, Wells Memorial Hospital, public libraries, electric street railroads, daily and weekly newspapers, and several National banks. The principal manufactures are hosiery, carpets, wallpaper, shoes, harness, rubber goods, medical supplies, automobile supplies. cigars, boilers, etc. Pop. (1910) 23,388; (1920) 32,779.

NEWBURGH, a city of Orange co., N. Y.; on the Hudson river, and on the Erie, the West Shore, and the New York Central and Hudson River railroads; 60 miles N. of New York. The Hudson river here expands into Newburgh Bay, about 8 miles long and 2 miles wide. The city is built on sloping ground rising 300 feet above river-level. It contains St. Luke's Hospital, a public library, Masonic Temple, an academy, National and savings banks, Home for the Friendless, Home for Children, waterworks, and electric light and street railroad plants. It is a shipping point for grain, dairy products, flour, coal, etc. It also has flour, cotton, woolen and plaster mills, tanneries, and manufactories of machinery, etc. Washington's Headquarters, an old stone mansion, with many relics of the Revolutionary War, is a noted attraction, and near by is a unique Trophy Memorial. The first settlement was made in 1709. Pop. (1910) 27,805; (1920) 32,779.

NEWBURY, a market-town of Berkshire, England, on the Kennet, 17 miles W. by S. of Reading, and 55 from London. It has an old church built in the reign of Henry VII. The grammar school claims King John for its founder (1216). The town has many ancient and wealthy charities. It was incorporated by Elizabeth in 1596. Two hard-fought battles took place here in the Great Rebellion—one in 1643; the other in 1644. Pop. about 13,000.

NEWBURYPORT, a city, port of entry, and one of the county-seats of Essex co., Mass.; on the Merrimac river, and on the Boston and Maine railroad; 37 miles N. E. of Boston. It contains the Putnam Free School, Anna Jacques Hospital, high school, public library, an Old Ladies' Home, Marine Museum, the house in which William Lloyd Garrison was born, the Old South Church, where the remains of Whitefield are buried, electric light and street railroad plants, daily and weekly newspapers, and National and savings banks. It has manufactories of machinery, cotton goods, boots and shoes, fiber braid, collars and cuffs, hats, and silverware. Pop. (1910) 14,949; (1920) 15,618.

NEW CALEDONIA, an island in the Pacific Ocean; about 800 miles E. of Australia. It is of volcanic origin and is surrounded by sand bars and coral reefs. It was discovered by Captain Cook in 1774, and appropriated by the French as a convict settlement in 1854. The capital is Noumea, near the S. end of the island, with a fine harbor. The island is mountainous, well watered and wooded, and yields coffee, maize, tobacco, sugar-cane, grapes, manioc, and pineapples. Stock-raising is an important industry. The climate is hot but healthy. There are nickel mines, and also mines of copper and cobalt, considerable quantities of which are raised and exported, as also chrome, copra, coffee, etc. With the adjacent Loyalty Islands the area is estimated at 7,700 square miles. The native population, of Melanesian race, and cannibals, has diminished greatly since the French occupation. A considerable trade has been developed in recent years. There is a railroad from Noumea to Bourail (90 miles). There is steamship communication with Sydney. Pop. about 50,000.

NEWCASTLE, a city of Indiana, the county-seat of Henry co., 44 miles by rail N. E. of Indianapolis. It is situated on the Blue river, and on the Cleveland, Cincinnati, Chicago, and St. Louis, the Fort Wayne, Cincinnati and

Louisville, and Pittsburgh, Cincinnati, Chicago and St. Louis railroads. The State village for epileptics is two miles N. of the city. The city is the center of an important farming region and is also an industrial center of importance. It has manufactories of sheet iron, steel, automobiles, clothing, pianos, bricks etc. Pop. (1910) 9,446; (1920) 14,458.

NEWCASTLE, a city and county-seat of Lawrence co., Pa.; at the confluence of the Neshannock and the Shenango rivers, and on the Pittsburgh and Lake Erie, the Pennsylvania, the Erie, the Baltimore and Ohio, and the Buffalo, Rochester and Pittsburgh railroads; 50 miles N. E. of Pittsburgh. It contains the Shenango Valley Hospital, waterworks, electric street railroads, gas and electric lights, daily and weekly newspapers, and several National banks. It is in a section rich in sandstone and limestone, iron ore, fire clay, and bituminous coal. It has manufactories of sewer pipe, glass, fire brick, iron, steel, boilers, etc. Pop. (1910) 36,280; (1920) 44,938.

NEWCASTLE-UNDER-LYME, a parliamentary and municipal borough of Staffordshire, England, on the Lyme brook, 147 miles N. W. by N. of London. Brewing, malting, and the making of paper and army clothing are the principal industries, while the surrounding district is noted for its potteries, and numerous coal mines are worked. Pop. about 21,000.

NEWCASTLE-UPON-TYNE, a city in Northumberland co., England, on the Tyne, 54 miles E. of Carlisle. It is built on an acclivity extending along the river on the site of an old Roman camp. The principal buildings are St. Nicholas Church, the Mansion House, the Trinity House, Exchange, and Moot Hall. In Grey street is erected a column 136 feet high, and surmounted by a colossal statue of Earl Grey. The chief manufactures are glass, pottery, chemicals, iron, tin, and other metal goods. Ship building is carried on largely. Its importance is mainly owing to the coal trade from the mines along both banks of the Tyne. The proverbial expression, "Carrying coals to Newcastle," bears allusion to this city. The port of Newcastle is fourth in rank in Great Britain. Pop. about 300,000.

NEW-CHWANG, or NIU-CHWANG, a city of China, province of Manchuria, on the Liao river, 20 miles from its mouth and 120 from Mukden. By the treaty of Tientsin (1858) New-chwang was opened to foreign trade. From the accumulation of alluvial soil in the lower reaches of the river, vessels are obliged to load and discharge at Ying-tzu, at its mouth. It is there the Europeans are settled, and they call Ying-tzu by the name of the treaty port New-chwang—which latter is now a greatly decayed place. Ying-tzu imports cotton, woolen, and silk goods, sugar, paper, metals, opium, tobacco, etc. Large quantities of salt are manufactured in the vicinity. The port was captured by the Japanese in March, 1895; in 1896 provision was made for connecting it with the Siberian railway. The port is closed four or five months from November with ice. Since 1872 Scotch Presbyterian missionaries have been working here; there is also a Roman Catholic mission. Pop. about 65,000.

NEWCOMB, SIMON, an American astronomer; born in Wallace, N. S., March 12, 1835; was educated by his father; came to the United States in 1853; taught in Maryland for two years; studied at the Lawrence Scientific School in Cambridge, graduating in 1858. In 1861 he was appointed Professor of Mathematics in the United States navy and assigned to the United States Naval Observatory in Washington. While there he negotiated the contract for the 26-inch telescope authorized by Congress, and supervised its construction. He was connected with the "American Ephemeris and Nautical Almanac"; associated with the equipment of the Lick observatory in California; was secretary of the commission appointed by the United States Government to observe the transit of Venus, Dec. 9, 1874; and in 1884 became Professor of Mathematics and Astronomy at Johns Hopkins University. He contributed largely to astronomical literature, especially along mathematical lines. Among his numerous books are: "Popular Astronomy" (1878); "His Wisdom the Defender" (1900); etc. He died July 11, 1909.

NEWELL, FREDERICK HAYNES, civil engineer and author. Born at Bradford, Pa., in 1862, he graduated in 1885 from the Massachusetts Institute of Technology, and afterward engaged in mining in Colorado. In 1888 he became assistant hydraulic engineer to the United States Geological Survey, becoming successively hydrographer, chief engineer, and director in the United States Reclamation Service. Since 1914 he has been professor of civil engineering at the University of Illinois. His works include: "Agriculture by Irrigation"; "Public Lands of the United States"; "Engineering as a Career."

NEWELL, PETER, American illustrator; born in McDonough co., Ill., in 1862. He first worked as a photographer, and made crayon portraits at Jacksonville, Ill. Later he came to New York and studied at the Art Students' League, making his home at Leonia, N. J. Here he began the quaint humorous illustrations for periodicals which first brought him notice. Among the popular books he wrote and illustrated are: "Topseys and Turveys" (1893-1894); "Peter Newell's Pictures and Rhymes" (1899); "The Hole Book" (1908); "Jungle Jangle" (1909); "Slant Book" (1910); "Rocket Book" (1912); etc. Mr. Newell also illustrated books by Mark Twain, Frank Stockton, and J. K. Bangs.

NEWELL, ROBERT HENRY ("ORPHEUS C. KERR"), an American humorist; born in New York City in 1836. He was connected with the New York "Mercury" and "World," and was editor of "Hearth and Home" from 1874 to 1876. Among his works are: "The Orpheus C. Kerr Papers" (1862-1868); "The Palace Beautiful, and Other Poems" (1864); "The Cloven Foot," a travesty of Dickens's "Edwin Drood" (1870); "Versatilities" (1871); "There Was Once a Man" (1884). He died in Brooklyn, N. Y., in August, 1901.

NEW ENGLAND, a collective name given to the six Eastern States of the United States of America, Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut, embracing an area of 66,400 square miles. The area of New England is one-fiftieth of the total area of the United States.

NEW FOREST, a triangular district of southwest Hampshire, England, 9 miles S. W. of Southampton, bounded W. by the river Avon, S. by the Solent and English channel, and N. E. by Southampton Water. It measures about 14 by 16 miles, and has an extreme area of 144 square miles, or 92,365 acres, of which, however, only 64,232 belong to the crown. The district seems to have been wooded from the earliest times; its present name dates from 1079, when the Conqueror here made a "mickle deer-frith," and cleared away several hamlets. This afforestation, enforced by the savage "Forest laws," was regarded as an act of the greatest cruelty; and the violent deaths met by two of his sons, Richard and William Rufus, of whom one was killed here by a stag, and the other by an arrow, were looked on as a special judgment. The deer were removed under an act of Parliament (1851); and under another of 1877 the New Forest now is managed by the court of Verderers as a public pleasure ground and cattle farm.

NEWFOUNDLAND, an island and British colony of North America; in the Atlantic Ocean at the mouth of the Gulf of St. Lawrence, and separated from Labrador on the N. by the straits of Belle Isle. The island is 370 miles in length, 290 in breadth, and about 1,000 in circumference; area, 42,200 square miles; pop. (1901) 217,037; (1917) 252,464. Capital, St. Johns.

About a third of the area of the island is occupied by lakes and ponds. The coast provides a large number of excellent and sheltered harbors. The plains abound with herds of the caribou deer; these, with bears, wolves, foxes, and beaver, form the principal fauna of the island, which is a favorite resort for sportsmen. In winter the cold is severe. Much of the soil, especially in the S., is unproductive; grain and root crops are the most important agricultural products; large areas are adapted to stock raising. The chief resources of the inhabitants have been in the past the cod, seal, and salmon fisheries, these industries being the most extensive of the kind in the world.

The chief industries of the people are agriculture, fishing, mining and lumbering. The annual catch of fish is valued at about $1,500,000, and the sealing industry is also important. In 1918 151,431 seals, valued at $864,000, were taken. About 1,500 men are engaged in the fishing industry. Valuable iron deposits have been found in various parts of the island. The forests produce large quantities of pulp for paper and extensive pulp and paper mills have been established in Grand Falls, Bishop Falls, and Deer Lake.

The imports of Newfoundland in the years 1918-1919 were valued at £5,528,000, and the exports at £6,198,000. The annual expenditure is about $5,700,000, and the annual revenue about $6,500,000. There are about 900 miles of railway and about 4,600 miles of telegraph.

A part of the peninsula of Labrador, lying between the Hudson Strait and Blanc Sablin, is included in the administration of Newfoundland.

Newfoundland was discovered by John Cabot in 1497. In 1583, Sir Humphrey Gilbert took possession in the name of England and in 1621 Calvert made a settlement in the peninsula of Avalon. Representation was granted in 1832. In 1854 the present form of government was established. Newfoundland forms, with the department of Labrador, a

crown colony. It is administered by a governor, assisted by an executive council, and a House of Assembly of 36 members.

Soon after the discovery of Newfoundland, French fishermen frequented the "banks" in larger numbers than the English, and Great Britain did not take formal possession till 1583. The first permanent settlement was made in 1623. Before the treaty of Utrecht (1713), which ceded the island to Great Britain, the French and English had frequent conflicts over the right of possession. Fishing rights were conceded to the French, and this led to long and bitter disputes which have interfered with the development of the island. The French claim the exclusive right to fish from Cape John on the E. coast, around the N. coast, to Cape Ray on the W. Great Britain has never admitted this claim. The position maintained by the French has prevented the development of the mineral resources on the N. coast. In March, 1890, a *modus vivendi* was concluded between the French and British governments, remaining in force till Dec. 31, 1900. It caused great dissatisfaction among the people of the island. A Royal Commission, appointed in August, 1898, decided that part of the French claims should be removed by purchase or concession; that the lobster fisheries should be arranged on the same basis; that the French should be furnished free bait, on abandonment of their bounties (to expire in 1901); that they should be prohibited from interfering with the "Treaty Shore," and that smuggling should be suppressed. On the outbreak of the war in South Africa, the colony on its own initiative renewed the *modus vivendi*, in order to relieve the home government and to prove its loyalty. The executive power of the colony is administered by a governor, executive council, legislative council and elected House of Assembly. Newfoundland sent a comparatively large number of men to Europe during the World War, and the service rendered by the colony was proportionately equal in extent to that of any other part of the British Empire.

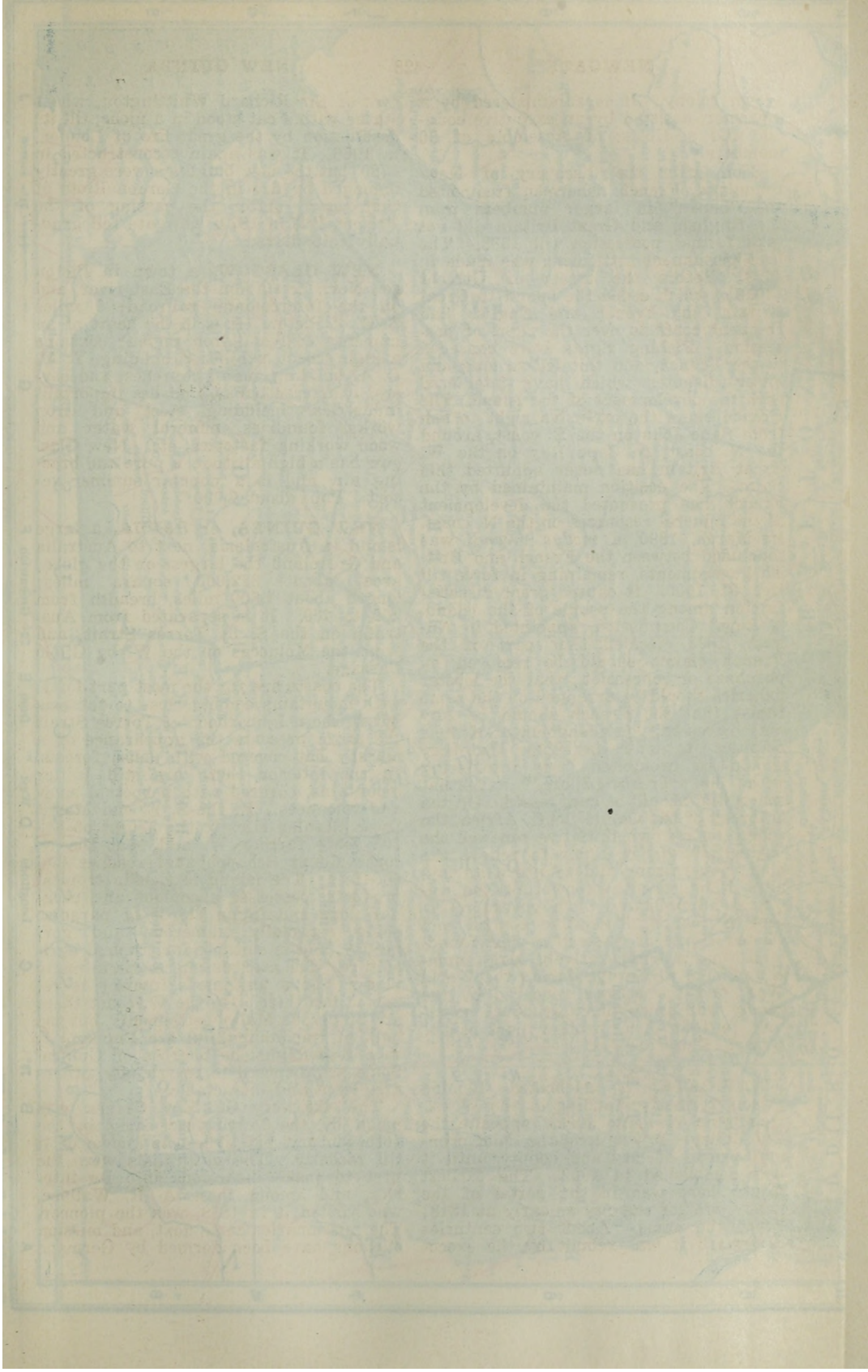
NEWGATE, a celebrated London prison, formerly standing at the W. extremity of Newgate street, opposite the Old Bailey. It was long the chief criminal prison of city and county until it was demolished in 1902. The earliest prison here was in the portal of the "new gate" of the city as early as 1218; hence the name. About two centuries afterward it was rebuilt by the executors of Sir Richard Whittington, whose statue with a cat stood in a niche, till its destruction by the great fire of London, in 1666. It was again reconstructed in 1780, but the new buildings were greatly damaged by fire in the Gordon Riots of that year. After the passing of the Prisons Bill in 1877, Newgate fell gradually into disuse.

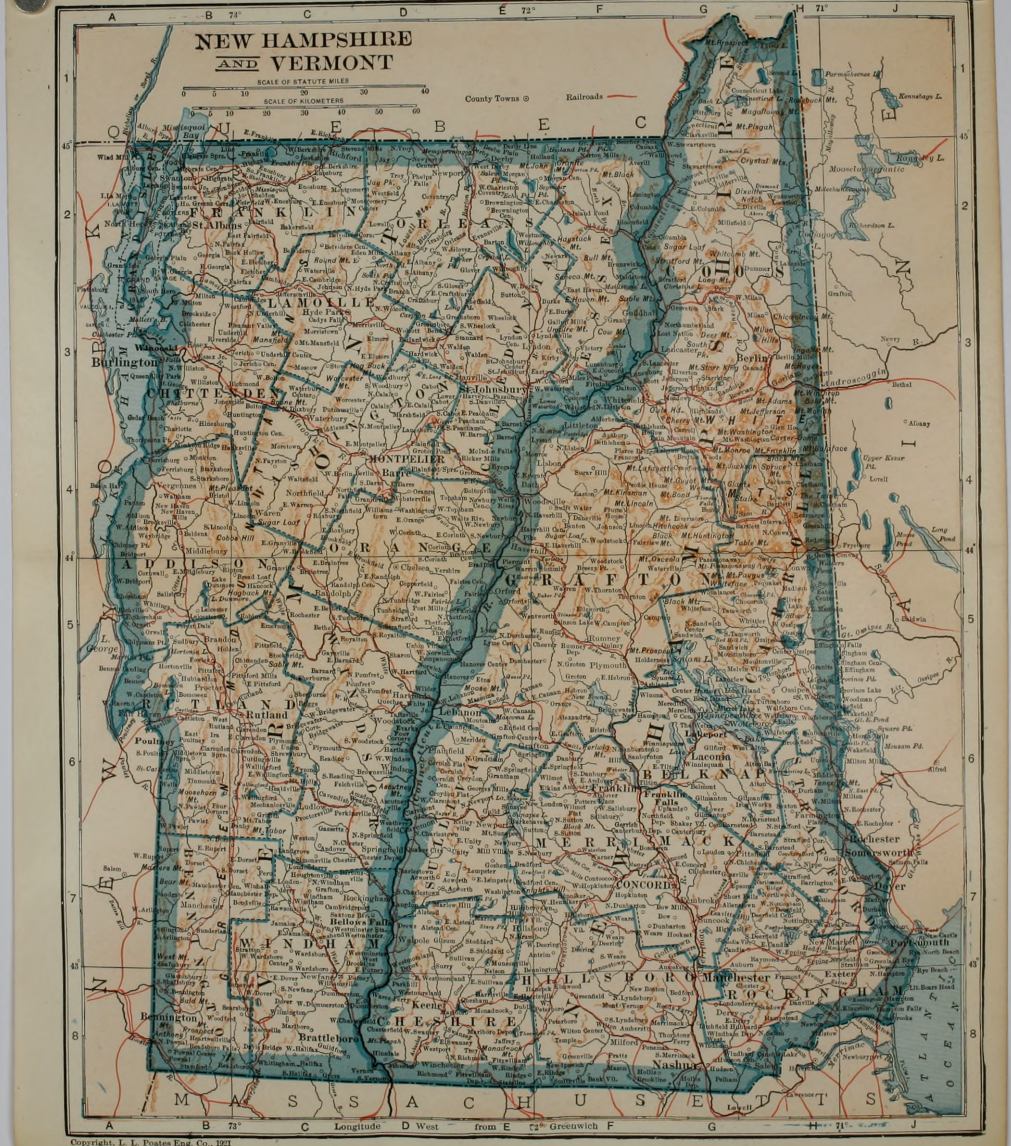
NEW GLASGOW, a town in Pictou co., Nova Scotia; on the East river, and on the Intercolonial railroad; 9 miles S. E. of Pictou. It is in the heart of an immense coal and iron region; contains a high school, exhibition building, Y. M. C. A. building, many churches, and several chartered banks, and has important industries, including steel and iron works, foundries, mineral water and wood working factories, etc. New Glasgow has a high altitude, a pure and bracing air, and is a popular summer resort. Pop. about 7,000.

NEW GUINEA, or PAPUA, a large island in Australasia, next to Australia and Greenland the largest on the globe; area, about 312,000 square miles; length about 1,500 miles, breadth from 200 to 400. It is separated from Australia on the S. by Torres Strait, and from the Moluccas on the W. by Gilolo Passage.

The coasts are for the most part lofty, with mountains coming close to the sea, but in the neighborhood of Torres Strait the shore presents the appearance of a marshy flat covered with dense forests. In the interior there are still loftier mountains, covered with perpetual snow and volcanoes. In the S. E. end Mount Owen Stanley rises to the height of 13,205 feet; farther W. and near the N. coast Mount Schopenhauer reaches 20,000 feet. The island is rich in tropical products, possesses a copious and peculiar flora and fauna (birds of paradise being especially numerous and gorgeous), and is suitable for tropical agriculture. The coast is miasmatic in many places; the mountainous interior is reported healthier. On the W. coast there are numerous Malay settlements, but the bulk of the inhabitants are Papuans, a race resembling the negroes of Guinea. Some are disposed to be friendly, others are fierce and intractable.

The discovery of New Guinea was made by the Portuguese early in the 16th century, but little was known of it till recently. The naturalists were the first to make incursions into its interior, and among these A. R. Wallace, who visited it in 1858, was the pioneer. The missionaries came next, and mission stations have been formed by Germans




NEW HAMPSHIRE
AND VERMONT
SCALE OF STATUTE MILES
SCALE OF KILOMETERS
County Towns ◎
Railroads
Longitude West from Greenwich
Burlington
Montpelier
Rutland
Bennington
Brattleboro
Keene
Concord
Manchester
Nashua
Portsmouth
Lebanon
Berlin
Littleton
Laconia
Franklin
Claremont
Lancaster
Colebrook
Woodsville
Lake Champlain
Connecticut R.
Merrimack R.
Androscoggin R.
Lake Memphremagog
Lake Winnipesaukee
Lake Sunapee
Mt. Washington
Mt. Monadnock
Mt. Ascutney
Mt. Mansfield
Mt. Equinox
Mt. Kearsarge
Mt. Sunapee
Mt. Cardigan
Mt. Prospect
Mt. Pisgah
Mt. Magalloway
Mt. Prospect
Mt. Pleasant
Mt. Pliny
Mt. Pollux
Mt. Forest
Mt. Hereford
Mt. Orford
Mt. Lafayette
Mt. Lincoln
Mt. Liberty
Mt. Flume
Mt. Osceola
Mt. Tecumseh
Mt. Carrigain
Mt. Moosilauke
Mt. Cube
Mt. Kinsley
Mt. Cleveland
Mt. Ellen
Mt. Abraham
Mt. Hunger
Mt. Ararat
Mt. Pisgah
Mt. Sugar Loaf
Mt. Monadnock

on the N. E. coast, and by the London Missionary Society at various points on the S. E. coast. Germany and the Australian colonies also began to take an interest in New Guinea, and the latter urged the home government to annex the E. port of the island, the W. portion having long been recognized as Dutch. At length the delimitation and division of the island between Great Britain, Germany and Holland was settled in 1885. That part of the island lying W. of the 141st meridian was assigned to Holland, and comprises 151,789 square miles; the N. part of the rest of the island was assigned to Germany, and the S. to Great Britain. The former German territory, called Kaiser Wilhelm's Land, contains about 70,000 square miles, the English territory 90,540 square miles.

The government is in the hands of an administrator appointed by the crown, assisted by an executive and a legislative council. New South Wales, Victoria, and Queensland each contribute to the expense of the government. Land cannot be purchased except from the administrator. The deportation of the natives is forbidden, as is also the sale to them of firearms, intoxicating spirits, or opium. The official center is Port Moresby. The islands of Torres Strait, which are the seat of a valuable pearl-shell and trepang fishery, and which practically command the strait, have all been annexed to Queensland. The Dutch have done little or nothing for their portion of the island. The Europeans in the colony give their attention mostly to trading or gold mining. The population of the Dutch portion is estimated at 200,000; of the German, 110,000; of the British, 350,000. The imports of New Guinea in 1917-1918 amounted to $1,384,074, and the exports to $1,073,545. The chief products are pearls, copra, and rubber. The German protectorate was occupied by an Australian force on Sept. 12, 1914, and from that time to the close of the war was under the military power of the British. By the terms of the Treaty of Paris it passed into the hands of the British Empire.

NEW HAMPSHIRE, a State in the North Atlantic Division of the North American Union; bounded by Maine, Massachusetts, Vermont, Quebec, and the Atlantic Ocean; one of the original 13 States; capital, Concord; number of counties, 10; area, 9,005 square miles; pop. (1890) 376,530; (1900) 411,588; (1910) 430,572; (1920) 443,083.

Topography.—The surface of the State is rugged. The Appalachian range of mountains enters the State from Maine, and as the White Mountains crosses the State diagonally with a maximum elevation in Mount Washington of 6,285 feet. Along the W. part of the State these mountains dwindle down to a range of hills. The White Mountain district is divided by the Saco and Lower Ammonoosuc river valleys, and the "Notch" into the White and Franconia ranges. This region presents magnificent scenery and is known as the "Switzerland of America." Besides Mount Washington, there are 28 other peaks over 4,000 feet high. The river system is divided into five drainage basins. The Connecticut river, forming the entire Vermont boundary line, and fed by the Upper and Lower Ammonoosuc, Mascona, Sugar, and Ashuelot rivers, drains the entire W. part of the State. The Androscoggin river, rising in Lake Umbagog, drains the N. E. and the E. mountain district is drained by the Saco. The Piscataqua, with its tributaries, the Salmon Falls, and the Cocheco, forms a S. E. basin. The mouth of this river forms the harbor of Portsmouth, the only harbor on the New Hampshire coast. The Merrimac river, formed by the junction of the Pemigewasset and Winnipiseogee, flows through a region of manufacturing cities to which it supplies unlimited water power. There are numerous beautiful lakes and ponds in the State, the largest being Winnipiseogee. Other lakes are the Umbagog, Squam, Sunapee, Great Bay, New Found, Connecticut, and Diamond lakes.

Geology.—The principal geological formations of New Hampshire are of Eozoic origin, this State being one of the first portions of the American continent to appear above the primal ocean. Terminal moraines and boulders illustrate the Glacial period, and deposits of Laurentian, Labradorian, Huronian, and Atlantic periods are also present. Magnetic and specular iron ore are found in places, and some copper is mined in the towns of Lyman and Monroe. New Hampshire is not an important State in the production of minerals and metals. The chief mineral product is granite. The annual output is valued at about $1,500,000. Bricks were produced in considerable quantities. Other mineral products are garnet, mica, mineral waters, and scythe stones. The total value of the mineral products is about $2,000,000 annually.

Soil and Productions.—The soil is light and sandy and with the exception of the Connecticut valley and portions of Coos county is not adaptable to farming. The soil is as a rule worn out from constant tillage and makes much better pastur-

age than farmland. The agricutural interests have of late been turned to stock raising and dairy farming. Large quantities of maple sugar and syrup are produced. The principal farm products are hay, rye, wheat, oats, potatoes, and buckwheat. The production of the principal crops in 1919 was as follows: corn, 1,050,000 bushels, valued at $1,785,000; oats, 1,221,000 bushels, valued at $1,038,000; hay, 675,000 tons, valued at $16,200,000; potatoes, 2,400,000 bushels, valued at $4,200,000. The forest trees include several varieties of pine, hemlock, spruce, and maple, oak, beech, birch, elm, hickory, butternut, chestnut, poplar, cherry, ash, and moosewood.

Manufactures.—In common with other New England States, the industrial interests of New Hampshire are devoted to manufacturing. The abundant water power produced by the Merrimac river makes central and southern New Hampshire one of the most important manufacturing sections of the country. The statistics of manufactures in 1914 was as follows: number of establishments, 1,736; average number of wage earners, 78,993; capital invested, $156,749,000; wages paid, $40,642,000; value of materials used, $114,993,000; value of finished products, $182,844,000. The principal products were cotton and woolen goods, boots and shoes, hosiery and knit goods, leather, machine shop and foundry products, paper, flour, clothing, furniture and wood pulp.

Banking.—On Oct. 31, 1919, there were reported 55 National banks in operation, having $5,235,000 in capital, $5,457,000 in outstanding circulation, and $5,616,500 in United States bonds, and 14 loan and trust companies with $805,000 capital and $932,000 surplus.

Education.—The total school population of the State is about 80,000. It has an enrolment of about 75,000. In the elementary schools there are about 2,500 teachers and about 600 in the secondary schools. The average yearly salary of male teachers in the secondary schools is about $1,400 and the women teachers about $650. For higher education there were 52 public high schools; 31 private secondary schools; the State Normal School, at Plymouth; Dartmouth College, at Hanover; St. Anselm's College, at Manchester; and the New Hampshire College of Agriculture and Mechanic Arts, at Durham.

Churches.—The strongest denominations in the State are the Roman Catholic, Congregational, Methodist Episcopal, Regular Baptist, Free Will Baptist, Unitarian, Protestant Episcopal, Advent Christian, and Universalist.

Transportation.—The total railway mileage of the State in 1919 was 2,202. Of this 1,020 miles are controlled by the Boston and Maine.

Finances—The receipts for the fiscal year 1918 amounted to $4,367,422 and the disbursements to $4,062,048. The net debt of the State amounts to about $1,600,000.

Charities and Corrections.—The charitable and correctional institutions include a State Normal School at Manchester, State Hospital for the Insane at Concord, State Prison at Concord, State Sanatorium at Concord, School for Feeble-Minded at Laconia, and Soldiers' Home at Tilton. There are also a number of orphan asylums and homes for the children. A child welfare department was created in 1918.

State Government.—The governor is elected for a term of two years. Legislative sessions are held biennially, beginning on the first Wednesday of January, and are unlimited as to length. The Legislature has 24 members in the Senate, and 300 in the House. There are 2 representatives in Congress. The State government in 1920 was Republican.

History.—New Hampshire was settled in 1629 by an English colonist named Mason, under a grant made in 1623. In 1641 New Hampshire became a portion of the Colony of Massachusetts; who maintained her authority there till 1679, when the case being brought before the highest court of appeal in England on colonial matters, it was decided that the claim of Massachusetts was illegal, and New Hampshire was constituted a separate province. In 1686, the charter of Massachusetts, having been annulled, New Hampshire, Maine, Massachusetts, and Narragansett were united in one royal province, under President Dudley, and afterward under Governor Andros. In 1689, upon the news of the English Revolution, the government of Andros was overthrown, and Massachusetts resumed her old charter. In 1692, the province of New Hampshire was re-established by the English government. In 1776, the province issued a public declaration of independence, and organized a temporary government. After taking a prominent and distinguished part in the War of the Revolution New Hampshire, in convention (1788), gave in her adhesion to the United States Constitution by a majority of 11 votes in an assembly numbering 103; and in 1807, the seat of government was permanently established at Concord. On July 1, 1869, the State ratified the 15th Amendment to the National Constitution.

NEW HAMPSHIRE COLLEGE, an institution maintained by the State at Durham, N. H., having for its object the promotion of agricultural and scientific education. The courses given are in the arts and sciences, engineering, agriculture, and a two-year course in industrial mechanics. In 1916 a department of education was added. To residents of New Hampshire the tuition is free. The endowment amounts to $940,000, while the net income is $26,000. The college grounds and buildings are valued at $850,000. Students in 1914-1915 numbered 514.

NEW HANOVER, an island of the Bismarck archipelago; off the N. E. coast of New Guinea, with an area of 530 square miles.

NEW HAVEN, a city and county-seat of New Haven co., Conn., at the head of New Haven Bay, an excellent harbor 4 miles long that sets in northwardly from Long Island Sound. The city is located on the New York, New Haven, and Hartford railroad, 73 miles N. E. of New York City, and about 36 miles S. of Hartford. The city is the largest and most important in the State and is rapidly increasing in population and in industrial importance. It is also the home of Yale University.

New Haven has a great variety of manufacturing interests, most of them being of standard goods such as firearms and ammunition; rubber shoes, tires, and other rubber goods; household and builders' hardware, clocks and watches, cutlery, electric elevators, sewing machine attachments, dies, safes, paper wares and boxes, caskets, pianos, organs, silk, etc. New Haven has the general offices of the N. Y., N. H. & H. R. R. Co. The city is a great distributing point to and from all New England. The waters of the sound give New Haven water transportation facilities. A good harbor with a 20-foot channel and two steamboat lines for passenger and freight to New York afford shippers good means of transportation.

The assessed valuation of property in New Haven in 1920 was more than $200,000,000. The city has more than 200 miles of streets, most of them well paved. The city's water supply is stored in five lakes to the W., N. and E. of the city, aggregating 900 acres of water with a watershed of 6,600 acres surrounding them. The public school system is comprehensive with an enrolment of about 29,000 pupils. The annual cost of maintaining the city government is about $3,500,000.

In addition to Yale University the city is the home of the Hopkins Grammar School (the oldest preparatory school in the United States), the Gateway School (for girls), Hamden Hall (for boys), a Training School for Nurses, a Boardman Apprentice Shops School, a State Normal Training School, several business colleges, a Normal School of Gymnastics, etc. The city also contains large Protestant and Roman Catholic orphan asylums, has a Home for the Aged, a Public Dispensary, a Home for the Friendless, three large public hospitals, the famous Ives Memorial Library, a County Court House in marble of classical design costing $1,250,000; a Federal Building and Postoffice, costing $1,600,000; and Yale Bowl, an athletic field structure of concrete and steel with a seating capacity for 61,000 people. In the Bowl the great annual athletic contests between Yale and Princeton and Yale and Harvard are held.

New Haven is developing into the largest railroad transfer point in New England, the railroad system having in process of construction at Cedar Hill a freight classification yard for New England of about 1,000 acres, with more than 10 miles of trackage constructed in 1920.

New Haven was settled in 1638 by a company from London, under the Rev. John Davenport and Theophilus Eaton. It formed a separate colony till, in 1662, it was united to the Connecticut colony. On July 5, 1779, it was captured and plundered by the British under General Tryon. After the Revolutionary War commerce increased rapidly, but was greatly crippled by the Embargo Act and the War of 1812. New Haven received its charter in 1784, and prior to 1873 was one of the State capitals. Pop. (1900) 108,027; (1910) 133,605; (1920) 162,537.

NEW HEBRIDES, a group of islands in the Pacific Ocean, W. of the Fiji Islands, from lat. 13° to 20° S., long. 168° to 170° E.; area est. at 5,000 square miles. The largest ones are Mallicollo, and Espiritu Santo. One, Tanna, has an active volcano; and in consequence probably of volcanic action, Aurora, one of the most fertile, sank out of sight in 1871. Another violent volcanic outbreak occurred on Ambryn Island in 1913-1914. They are wooded and hilly, ebony and sandalwood being obtained; and their chief products are yams, bananas, cocoanuts, and sweet potatoes. The chief animal is a small pig, not larger when full grown than a rabbit. The native inhabitants, belonging to the Papuan race, were in general degraded and very fero-

cious, but have become more or less Christianized. These islands, according to the Anglo-French convention of 1906, are under the control of two joint French and British high commissions. Pop. about 75,000.

NEW IBERIA, a town in Louisiana; the parish-seat of Iberia parish. It is 125 miles W. of New Orleans, on the Bayou Teche and on the Morgan's Louisiana and Texas, the Franklin and Abbeville, and the New Iberia and Northern railroads. It is the center of an important agricultural district, devoted chiefly to the cultivation of sugar-cane, cotton, rice, corn, and other vegetables. It is also an industrial center. Its manufactories include shipyards, foundries, machine shops, knitting mills, etc. There are salt mines in the vicinity. Pop. (1910) 7,499; (1920) 6,278.

NEW IRELAND, now NEW MECKLENBURG, a long narrow island, belonging to the Bismarck (New Britain) Archipelago in the Pacific Ocean, N. E. of New Guinea; area, about 4,900 square miles; length 300 miles; width, 15 miles. The hills rise to 6,500 feet, and they and the whole of the interior are richly wooded. In 1884 a German protectorate was declared over the archipelago. An Australian force occupied the island in 1914 and the mandate over it was awarded by the Peace Conference to Australia in May, 1919. Chief town, Kalwieng. Pop. (native) about 28,000.

NEW JERSEY, a State in the North Atlantic Division of the North American Union; bounded by New York, Pennsylvania, Delaware, the Atlantic Ocean and Delaware Bay; one of the original 13 States; counties, 21; capital, Trenton; area, 8,224 square miles; pop. (1890) 1,444,933; (1900) 1,883,669; (1910) 2,537,167; (1920) 3,155,900.

Topography.—New Jersey is divided into two distinct geographical divisions, the N. portion being undulating and hilly, and the S. a low sandy plain. The N. half of the State is crossed by three parallel mountain ranges running in a S. W. direction. The Blue Ridge or Kittatinny, and the Highland ranges, are part of the Appalachian chain and the third or Orange Mountains belong to a series of low ridges traced from Massachusetts across Connecticut, New Jersey and Pennsylvania. The Blue Ridge crosses the Delaware river at the Delaware Water Gap, where its altitude is 1,486 to 1,625 feet. The greatest altitude in the the State is High Point, near the New York State line, 1,804 feet. Between the Blue Ridge and Highland ranges is the Kittatinny valley, 10 to 13 miles in width, and noted for its agricultural advantages. The Highland Range is in reality a deeply dissected plateau or tableland, its semi-detached portions being known as mountains, among which the highest are Hamburg Mountain, 1,488 feet, Wawayanda Mountain, 1,450 feet, Schooley's, Musconetcong, and Green Pond Mountains. The Orange Mountains are three parallel ridges of trap rock known as the First and Second Mountains, and Long Hill, separated by narrow valleys, underlaid by sandstone. A ridge of trap extends along the New Jersey shore of the Hudson river, known as the Palisades, and is world renowned for its scenic beauty. The Navesink Highlands, a group of sandy hills S. of Sandy Hook, and other detached hills to the S. W. rise to a height of nearly 400 feet. The entire S. portion of the State is an undulating plain gradually decreasing in altitude toward the Atlantic Ocean and Delaware river. The W. portion of the State is bounded and drained by the Delaware river. The Hudson flows along the E. boundary for 30 miles but receives no drainage. The principal rivers of the State are the Passaic which, fed by the Pompton and Rockaway, empties into Newark Bay; and the Raritan, flowing into Raritan Bay. There are numerous small rivers, and creeks flowing into the Atlantic or into small bays. Among these may be mentioned the Navesink, Shrewsbury, Tom's, Manasquan, Great and Little Egg Harbor rivers. The Atlantic coast has numerous tidal bays, and the N. part of the State abounds in mountains, lakes and ponds. Among the latter are Greenwood Lake, Budd's Lake, Lake Hopatcong, and Green Pond.

Geology.—Bands of geological formation cross the State in a N. E. and S. W. direction. With the exception of the coal measures, all the geologic ages are represented. The Azoic, represented by granite, crystalline limestone, and gneiss, is interlaced with the Palæozoic sandstone, slates, shales, and magnesium limestone in the N. W. The Triassic sandstone, broken by trap and basalt ridges, occupies a belt N. W. of a line from Jersey City to Trenton. This red sandstone deposit is said to have a thickness of 14,000 feet. The Cretaceous belt is just E. of the sandstone, and includes sands, marls, clays, and mixtures of the same. The S. part of the State is of drift deposits of loam, clay, sand and gravel.

Mineralogy.—For its size New Jersey is one of the richest mineral producing States in the Union. The Azoic and


A
75 30
B
75°
74°30′
D
74°
E


NEW JERSEY
SCALE OF STATUTE MILES
0 5 10 15 20 25 30
SCALE OF KILOMETERS
0 5 10 20 30 40 50
Places of 100,000 and over Newark
" " 20,000 to 100,000 Orange
" " 5,000 to 20,000 Red Bank
County Towns ⊙ Railroads
Longitude West from Greenwich
Copyright, L. L. Poates Eng. Co., 1921
PENNSYLVANIA
DELAWARE BAY
ATLANTIC OCEAN
LONG ISLAND SOUND
New York Bay
Lower
Trenton
New Brunswick
Paterson
Jersey City
Newark
Elizabeth
Plainfield
Somerville
Morristown
Bloomfield
Orange
Hoboken
Englewood
Hackensack
Dover
Phillipsburg
Easton
Belvidere
Flemington
Lambertville
Hightstown
Freehold
Long Branch
Red Bank
Asbury Park
Ocean Grove
Bradley Beach
Allenhurst
Deal Beach
Elberon
Sea Bright
Navesink R.
Atlantic Highlands
Sandy Hook
Fort Hancock
Point Pleasant
Bayhead
Manasquan
Mantoloking
Seaside Park
Barnegat City
Harvey Cedars
Spray Beach
Beachhaven
Great Bay
Little Egg Harbor
Atlantic City
South Atlantic City
Ocean City
Corsons Inlet
Townsends Inlet
Stone Harbor
Cape May
Cape May Point
Wildwood
Holly Beach
Burlington
Mount Holly
Camden
Gloucester City
Woodbury
Salem
Bridgeton
Millville
Vineland
Glassboro
Swedesboro
Penns Grove
Salem R.
Delaware R.
Raritan R.
Passaic R.
Hackensack R.
Rancocas Creek
Mullica R.
Great Egg Harbor R.
Maurice R.
Cohansey R.
Manasquan Inlet
Shark R.
Navesink R.
Shrewsbury R.
Newark Bay
Kill van Kull
Arthur Kill
Raritan Bay
Sandy Hook Bay
Barnegat Bay
Little Egg Harbor
Great Bay
Absecon Inlet
Great Egg Harbor Bay
Delaware Bay
Cape May Bay
Maurice R. Bay
Cohansey R. Bay
Penns Grove
Salem R.
Delaware R.
Raritan R.
Passaic R.
Hackensack R.
Rancocas Creek
Mullica R.
Great Egg Harbor R.
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Cohansey R.
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Newark Bay
Kill van Kull
Arthur Kill
Raritan Bay
Sandy Hook Bay
Barnegat Bay
Little Egg Harbor
Great Bay
Absecon Inlet
Great Egg Harbor Bay
Delaware Bay
Cape May Bay
Maurice R. Bay
Cohansey R. Bay

Palæozoic formations in the N. W. supply a large amount of magnetic iron, magnetic ore being practically the only kind now mined, though deposits of hematite and amanite are known. Copper ores are worked in Somerset county, and the Schuyler mine at Arlington was the first copper mine worked in the United States. The zinc mines in Sussex county are among the richest in the world. Lead, plumbago, manganese, and nickel are also found. Sand for glass-making, shell marls for fertilizers, lime for mortar and for fertilizing, porcelain, potters' and kaolin clays are among the more useful geographical resources. In building and paving stones New Jersey stands well, the famous Jersey sandstone is largely used for building purposes, and the gneiss-granite, limestone, blue-stone, slate and trap are all of great commercial value. Shipments of iron ore in 1918 amounted to 375,238 long tons, valued at $1,945,651. In the production of clay products New Jersey ranks third among the States, being exceeded only by Ohio and Pennsylvania. There is also an important production of zinc. Clay products were valued at $22,529,232, The total value of the mineral products of the State in that year amounted to $57,710,181.

Agriculture.—The soil is a sandy loam admirably adapted to agriculture, and in places where it has become worked out the abundant natural fertilizers soon reclaim it. The principal forest trees are the black, white, red, and pin oaks, hickory, beech, shagbark, maple, cedar, elm, black walnut, ash, tulip, white and pitch pine, hemlock, spruce, holly, witch-hazel, ironwood, cottonwood, dogwood, birch, alder, tamarack, willow, sweet gum, and wild cherry. The sand plains in the S. raise an abundance of cranberries, and the peach, apple, pear, and berry crops of New Jersey are of great value, while floriculture receives great care. The production and valuee of the prinsipal crops in 1919 were as follows: Corn, 10,800,000 bushels, valued at $16,524,000; wheat, 1,962,000 bushels, valued at $4,316,000; rye, 1,296,000 bushels, valued at $2,074,000; hay, 488,000 tons, valued at $14,201,000; potatoes, 10,560,000 bushels, valued at $17,846,000; sweet potatoes, 1,750,000 bushels, valued at $3,850,000; cranberries, 161,000 barrels, valued at $1,288,000.

Manufactures.—The manufactures of New Jersey are very extensive and varied. Newark is one of the principal general manufacturing centers of the country. Its production of jewelry, leather, and hats, is greater than in any other city in the Union. Jersey City has extensive abattoirs, stockyards, grain elevators, steel works, and sugar refineries. Paterson is noted for its silk mills and locomotive works; Trenton for its potteries; Bridgeton, Millville, Salem and Glassboro for their glass works; Bayonne for its oil refineries and boiler works; and Elizabeth for the shipyards, sewing machines, and machine shops. In 1914 there were 9,742 manufacturing establishments, employing 373,605 wage earners. The capital invested amounted to $1,352,382,000, and the wages paid to $211,136,000. The value of the material used was $883,465,000, and the value of the finished product, $1,406,633,000. The principal articles manufactured included hats, pottery, drugs, refined oils, chemicals, silk, machinery, boilers, bar steel and iron, aluminum goods, celluloid, household and agricultural utensils, paper, cotton and woolen goods, tobacco, sewing machines, glass, structural iron, clothing, brick and terra cotta, scientific apparatus, soap, leather goods, boots and shoes, saddlery, brass goods, jewelry, and hard and soft rubber goods.

Banking.—In 1919 there were reported 206 National banks in operation, having $22,957,000 in capital, $15,936,273 in outstanding circulation, and $14,652,270 in United States bonds. There were also 24 State banks with $2,238,000 capital, and $1,740,000 surplus; and 120 loan and trust companies, with $25,087,000 capital, and $18,689,000 surplus.

Education.—In 1918 the total enrolment in the public schools was 568,825. There was an enrolment in the evening schools of 33,588. There were 15,329 women teachers and 21,014 men teachers. The average daily attendance in the day schools was 423,570. The average salary per year in the day schools was $948.29. The total expenditures for educational purposes were $33,723,115. For higher education there are St. Peter's College at Jersey City, St. Benedict's College at Newark, Princeton University at Princeton, Seton Hall College at South Orange, Rutgers College at New Brunswick, Stevens Institute of Technology at Hoboken, Drew Theological Seminary at Madison, the German Theological School of Newark at Bloomfield, and Bordentown Female College at Bordentown.

Churches.—The strongest denominations in the State are the Roman Catholic; the Methodist Episcopal; Presbyterian, North; Regular Baptist; Protestant Episcopal; Reformed; African Methodist; Lutheran, General Council; and Congregational.

Railroads.—The total railway mileage in the State in 1919 was 6,006. The roads having the longest mileage are

the Pennsylvania and the Central Railroad of New Jersey.

Finances.—The total disbursements for the fiscal year 1919 amounted to $29,392,082, and the receipts to $32,587,384. There was a balance on hand at the end of the year of $18,458,832.

Charities and Corrections.—The charitable and correctional institutions of the State include State Hospitals for the Insane at Trenton and Morris Plains, State Home for the Feeble-Minded at Vineland, State Reformatory for Criminals at Rahway, State Prison at Trenton, deaf and dumb asylum at Trenton, and many other homes for the sick and mentally afflicted. Correctional schools and juvenile courts have been established in the counties of the first class.

State Government.—The governor is elected for a term of three years and receives a salary of $10,000 per annum. Legislature meets annually on the second Tuesday in January and is not limited as to length of session. The legislature has 21 members in the Senate, and 60 in the House. There are 12 representatives in Congress. In 1920 the State legislature was Republican and the governor a Democrat.

History.—The first settlement in New Jersey was made by the Dutch at Bergen Point about 1615. Many Swedes and Danes afterward settled there, but the Dutch maintained possession till 1664, when it became English property and was given to the Duke of York. He divided his grant of New Jersey between Lord Berkeley and Sir George Carteret, who named it New Jersey after the island of Jersey where he had previously been governor. In 1682 East Jersey came under the jurisdiction of William Penn, and his partners in the Commonwealth of Pennsylvania. In 1738 on the petition of the colony to have a separate administration, Lewis Morris was made governor of New Jersey, and until the beginning of the Revolutionary War the growth of the colony was peaceful. The province adopted a State constitution in 1776, and throughout the Revolutionary War it was frequently the scene of stirring events. On its soil were fought the battles of Trenton, Princeton, Red Bank, and Monmouth. The first legislature was convened at Princeton in August, 1776, and the Federal Constitution was adopted by a unanimous vote, Dec. 18, 1787. The State capital was definitely located at Trenton in 1790. The constitution of 1776, which was superseded by another on Aug. 13, 1844, was materially modified in 1873 and 1875. The original constitution granted suffrage without distinction to sex or color, and up to 1807 women exercised their right.

NEW JERUSALEM, CHURCH OF THE, a religious sect founded in London, England, in 1783, on the teachings of EMMANUEL SWEDENBORG (*q. v.*). The doctrines of this Church include a belief in the Trinity, God being the infinite divine essence, Christ the human manifestation of God, and the Holy Spirit the divine power seen in all the dispensations of God; a belief in heaven and hell, with an intermediate world of spirits where both good and bad go directly after death and are there prepared respectively for heaven and for hell; a belief in the Bible, as the repository of divine truth of which the Lord Himself is the author; though the different books were written by various inspired men. The polity of the Church is a modified episcopacy, but each congregation directs its own affairs. There are associations of congregations, and a general convention composed of delegates from the associations and a number of congregations which do not belong to any association. The Church of the New Jerusalem was founded in the United States in Baltimore, Md., in 1792, since which time it has spread to many States of the Union, but has the largest number of adherents in Massachusetts. At first there were two branches in the United States, connected with each other. This connection was severed in 1890. The larger body, known as the General Convention, in 1916, had 108 churches, 6,352 members, and church property valued at $1,711,090; the smaller, known as the General Church, had, in 1916, 15 churches, 733 members, and church property valued at $55,000. The latter considers the writings of Swedenborg as "divinely inspired."

NEW KENSINGTON, a borough in Westmoreland co., Pa., 18 miles N. E. of Pittsburgh. It is on the Allegheny river and on the Pennsylvania railroad. It is the center of aluminum, steel, and iron foundries. There are also manufactories of glass and white lead. There are large deposits of coal in the neighborhood. The town contains municipal and school buildings and a general hospital. Pop. (1910) 7,707; (1920) 11,987.

NEWLANDS, FRANCIS GRIFFITH, American legislator; born at Natchez, Miss., in 1848. Studied at Yale and took a course in law at Columbian (now Washington) University; practiced law in San Francisco and then settled at Reno, where he studied irrigation and


NEW MEXICO
SCALE OF STATUTE MILES
0 10 20 30 40 50 60 70 80
SCALE OF KILOMETERS
0 10 20 30 40 50 60 70 80 90 100 110 120
County Towns
Railroads
Longitude West from Greenwich
SAN JUAN
RIO ARRIBA
TAOS
COLFAX
UNION
MORA
SANTA FE
SAN MIGUEL
QUAY
MCKINLEY
SANDOVAL
VALENCIA
BERNALILLO
GUADALUPE
CURRY
DE BACA
ROOSEVELT
TORRANCE
SOCORRO
LINCOLN
CHAVES
SIERRA
GRANT
OTERO
EDDY
LEA
LUNA
DONA ANA
Albuquerque
Santa Fe
Las Vegas
Gallup
Roswell
Carlsbad
Alamogordo
Silver City
Deming
Las Cruces
Hillsboro
Socorro
Tularosa
Lincoln
Portales
Clovis
Tucumcari
Raton
Springer
Farmington
Aztec
Bloomfield
Chama
Espanola
Taos
Questa
Tierra Amarilla
Cuba
Jemez Springs
Bernalillo
Los Lunas
Belen
Grants
Milan
Thoreau
Crownpoint
Window Rock
Ganado
Chinle
Fort Defiance
Shiprock
Kirtland
Aztec
Bloomfield
Navajo Dam
Pagosa Springs
Dulce
Tres Piedras
Penasco
Mora
Wagon Mound
Las Vegas
Pecos
Glorieta
Cerrillos
Madrid
Golden
Moriarty
Estancia
Mountainair
Willard
Progreso
Torreon
Encino
Corona
Vaughn
Fort Sumner
Santa Rosa
Puerto de Luna
Anton Chico
Tucumcari
Logan
Nara Visa
Grady
Melrose
Clovis
Texico
Portales
Elida
Dora
Roswell
Hagerman
Lake Arthur
Dexter
Hope
Artesia
Lakewood
Loco Hills
Malaga
Carlsbad
Queen
Orla
Loving
Jal
Eunice
Monument
Hobbs
Lovington
Tatum
Caprock
Kenna
Causey
Elkins
Dunlap
Ingleside
Canyon
Chaparral
Tucumcari
Conchas Dam
Ute Park
Cimarron
Eagle Nest
Angel Fire
Red River
Questa
Taos Pueblo
Arroyo Hondo
Valdez
Black Lake
Rayado
Colmor
Abbott
Gallegos
Sabinoso
Bueyeros
Roy
Mosquero
Solano
Sanchez
Trementina
Chaperito
Colonias
Gallinas Spring
Sand Spgs
Hudson
Endee
Revuelto
Dodson
Preston
Murdock
Arch
Kenna
Causey
Floyd

reclamation of land. Advocated the free coinage of silver; was elected a Democrat on the silver issue to the House of Representatives 1893-1903. Re-elected Senator 1909-1914. The Newlands' Act of 1913 provides means of mediation and arbitration in controversies on railway wages. In 1914 Senator Newlands took a leading part in framing the Interstate Trade Commerce Act. Died in 1917.

NEW LEON, or NUEVO LEON (nū-ā-vē lā-ōn), an inland State of Mexico; area, 25,032 square miles. It is mountainous but fertile, and lead, gold, silver, and salt are worked; capital Monterey, about 75,000. Pop. about 380,000.

NEW LONDON, a city, port of entry, and one of the county-seats of New London co., Conn., on the Thames river, 3 miles from Long Island Sound, and on the New England, the New York, New Haven and Hartford, and the Central Vermont railroads; 50 miles E. of New Haven. Here are the New London County Historical Society Library, public library, hospital, parks, Connecticut College for Women, and Naval School of Instruction, United States naval station, electric street railroads, electric lights, National and State banks, daily and weekly newspapers, and waterworks. It has woolen mills, silk mills, iron foundry, sewing-silk mill, cotton-gins, lumber mills, hardware works, copper tube works, oil-engine works, and printing press works. New London is protected by Forts Trumbull and Griswold. The latter was the scene of a massacre in 1781, which is commemorated by a shaft 127 feet high. Pop. (1910) 19,659; (1920) 25,688.

NEWMAN, ALLEN GEORGE, American sculptor; born in New York in 1875. Studied at the Academy of Design. Devoted himself almost entirely to monumental work, some of the best examples of which are: "The Triumph of Peace," Atlanta, Ga.; "The Hiker," the figure of a soldier commemorating the Spanish-American war; "Memorial to the Women of the South," Jacksonville, Fla. He has also executed monuments of noted persons: Hendrik Hudson, New York. General Sherman, Scranton, Pa. General Oates, Montgomery, Ala. General Price, Keytesville, Mo.

NEWMAN, JOHN HENRY; born in London, England, Feb. 21, 1801; was ordained in 1824, and in the following year his friend Dr. Whately having been appointed head of St. Alban's Hall, Newman was by him selected as his vice principal. He was one of the most active in commencing and carrying on the so-called Oxford movement—the great object of which was to counteract as well the Romanizing as the dissenting tendencies of the time, by restoring and bringing into notice what Newman and his friends believed to be the catholic character of the English Church. With this view he commenced, in 1833, the series known as the "Oxford Tracts," to which he was himself one of the chief contributors; and in 1838 he also became editor of the "British Critic." In October, 1845, he was admitted into the Roman Catholic Church, a step which was immediately followed by the publication of a work on the "Development of Christian Doctrine." Soon afterward he went to Rome, where, after some preparation, he was admitted to orders in the Roman Catholic Church; and in 1848, on his return to England, he established a branch of the Congregation of the Oratory of St. Philip Neri, of which he was himself appointed the superior. In 1852 he was appointed rector of the Catholic University established in Dublin; and in 1879 he was made a cardinal by Pope Leo XIII. Newman was an opponent of ultramontanism. Among his works written after 1845 were "Callista," a tale; "Apology for my Life," "Essay on Assent," "History of Arianism," etc. Several of his hymns are well known, particularly "Lead, Kindly Light." He died Aug. 11, 1890.

NEWMARKET, a market-town, lying on the border of Suffolk and Cambridgeshire, England, 14 miles E. N. E. of Cambridge. It chiefly consists of one long street, and contains an unusual number of hotels and fine private houses, belonging to the great patrons of the turf. Among the principal edifices are the Jockey Club. The town owes its prosperity to its horseraces, as old at least as 1605. The race ground on Newmarket Heath, to the W., is one of the very finest in the world. There are eight annual meetings, the principal events being the Thousand Guineas at Easter and the Cesarewitch in October. Newmarket is known as the racing capital of England. Pop. about 11,000.

NEW MECKLENBURG, an island formerly known as NEW IRELAND (*q. v.*), in the Bismarck archipelago, 350 miles N. E. of New Guinea. It has an area of about 5,000 square miles, consisting chiefly of mountains. Little is known of the interior. It is very thinly populated.

NEW MEXICO, a State in the Western Division of the North American Union; bounded by Colorado, Oklahoma,

Texas, Mexico, and Arizona; organized as a Territory, Sept. 9, 1850; number of counties, 29; capital, Santa Fé; area, 122,580 square miles; pop. (1890) 153,593; (1900) 195,310; (1910) 327,396; (1920) 360,350.

Topography. — The State is a lofty plateau, crossed by mountain ranges, being the foundation of the Rocky and Sierra Madre Mountains. The Sierra Madre range passes through a series of low and often detached ranges to join the Sierra Madre range in Mexico. The Rocky Mountains, in the E. of the State, are the highest and often reach an elevation of 13,000 feet. The W. part is characterized by isolated peaks, lofty plateaus and deep canons. The Llano Estacado is a broad nearly barren plateau in the S. E. The Rio Grande valley descends from an elevation of 6,000 feet near the Colorado border to 3,000 feet in the S. The Rio Grande traverses the State in a N. and S. direction and forms the principal drainage system. The Rio Pecos runs nearly parallel to it on the E. and finally joins it in Texas. Other important rivers are the Rio Chama, Rio Puerco, San Juan, Little Colorado, and Gila, the first two flowing into the Rio Grande, and the others being tributaries to the Colorado.

Geology.—The chief geological formations are of the Palæozoic and Carboniferous periods, broken here and there by Azoic formations. Sandstones of Palæozoic formation are overlaid in places by lava beds, while in other portions large areas of exposed beds of marl occur. Carboniferous limestones cover strata of Tertiary and Cretaceous deposits in the central portion of New Mexico. The mineral productions are quite extensive. Gold, silver, copper, lead, anthracite and bituminous coal, lignite, salt, plumbago, fire clay, gypsum, cement and marble occur in the mountain districts and fine turquoises, emeralds, sapphires, garnets, opals, agates, petrified wood, and other precious stone abound. Coal production in 1918 amounted to 4,241,000 tons, an increase of about 242,000 tons over the production of 1917. The production of copper has also become an important industry. There were produced in 1918 96,559,580 pounds of copper. The production of gold was 30,871 fine ounces, valued at $638,200. The silver production amounted to 763,758 fine ounces, valued at $763,758. Other mineral products of importance are clay products, lead, and zinc. The total value of the mineral products in 1917 was $43,312,947.

Soil and Productions.—The soil is very productive, but as yet but little worked, though irrigation by means of wells and canals is being rapidly installed. The cereals grow well and the ordinary farm, orchard, and garden fruits are raised to a considerable extent. The hills and valleys are covered with a short grass, which provides excellent grazing facilities. Stock raising, especially of sheep, is carried on extensively. The most valuable farm crops are wheat, hay, corn, oats, and potatoes. New Mexico is but sparsely wooded. The evergreens, pine, spruce, and fir grow on the mountains and lower down, the cedar, mesquite, nut-pine, oak, ash, maple, walnut, sycamore, and cottonwood. The State is noted for its many species of yucca and cactus.

Agriculture. — The production and value of the principal crops in 1919 was as follows: Corn, 7,200,000 bushles, valued at $10,872,000; oats, 2,340,000 bushels, valued at $2,223,000; wheat, 6,100,000 bushels, valued at $12,200,000; hay, 640,000 tons, valued at $11,757,000; potatoes, 494,000 bushels, valued at $940,000; beans, 960,000 bushels, valued at $3,562,000.

Manufactures. — The statistics of manufacturing for 1914 were as follows: Number of establishments, 368; average number of wage earners, 3,776; capital invested, $8,984,000; wages paid, $2,695,000; value of materials, $4,430,000; value of finished product, $9,320,000. The principal manufacturing cities are Albuquerque, Santa Fé, and Socorro. The principal manufactures include railroad cars, flour and grist, lumber and timber products, masonry, bread and bakery products, brick and tile, foundry and machine shop products, boots and shoes, tobacco, and cigars.

Banking.—On Oct. 31, 1919, there were reported 46 National banks in operation, having $3,135,000 in capital, $1,876,727 in outstanding circulation, and $1,948,000 in United States bonds.

Education. — The total enrolment of the public schools of the State is about 80,000. There are about 2,000 teachers with an average monthly salary of $77.00. School property is valued at $3,000,000. The total expenditure for the public schools exceeds $2,500,000 annually. For higher education there were 6 public high schools, 4 private secondary schools, the Normal School of New Mexico at Silver City, the New Mexico Normal University at Las Vegas, and the University of New Mexico at Albuquerque.

Churches.—The strongest denominations in the State are the Roman Catholic; Methodist Episcopal; Presbyterian, North; Methodist Episcopal,

South; Mormon; Protestant Episcopal; and Regular Baptist, North.

Transportation.—The total length of railway mileage in the State in 1919 was 3,817. The Atchison, Topeka and Santa Fé, and the El Paso and Southwestern have the longest mileage.

Charities and Corrections.—The charitable and correctional institutions of the State include an asylum for the blind at Santa Fé, Deaf and Dumb Asylum at Santa Fé, Insane Asylum at Las Vegas, Orphan School at Santa Fé, Reform School at Springer, and State Penitentiary at Santa Fé.

Government.—New Mexico became a State following the passage of the Enabling Act in 1910. A State convention was held to construct a constitution for the State. This constitution was submitted to a popular vote on Jan. 21, 1911. In general, it follows older models of State constitutions. It includes, however, a modified referendum and an elective corporation commission. In its organization the government follows closely that of other States. It was formally admitted to statehood in November, 1911. The State Legislature consisted of 24 members in the Senate and 49 members in the House of Representatives. The Governor holds office for two years. Legislative sessions are biennial and begin on the second Tuesday in January; limited to 60 days. There is one representative at large in Congress.

History.—The first explorers of this region were Spaniards from Mexico, who visited it in the middle of the 16th century and found it inhabited by a superior race of Aztecs or Toltecs, who lived in walled cities, had manufactures of cotton and wool, irrigated and cultivated the soil, and who had reached a certain standard of civilization. In 1598 a settlement was made at San Gabriel, but was abandoned in 1605, at the founding of Santa Fé. The Territory was named New Mexico, mines were opened, and the Pueblo Indians forced into slavery to operate them. They revolted and in 1680 drove the Spaniards from the country. They returned in 1694 and built several towns, founding Albuquerque in 1706. During the Mexican War the United States forces under General Stephen Kearney invaded New Mexico and captured Santa Fé, Aug. 18, 1846. By the treaty of Guadaloupe Hidalgo, 1848, the entire Mexican possessions, now included in the United States, were ceded to the United States, and in 1850 they were organized as the Territory of New Mexico. Since then the area has been reduced by the cutting off of Arizona, and parts of Colorado and Nevada.

NEWNAN, a city of Georgia, the county-seat of Coweta co. It is about 40 miles southwest of Atlanta on the Atlanta and West Point and the Central of Georgia railroads. It is an important center for fruit growing and farming. It has a large cotton trade. Its industries include canning and cigar factories. There is a library and a handsome court house. Pop. (1910) 5,548; (1920) 7,037.

NEWNES, GEORGE, SIR, English editor and publisher; born in Derbyshire in 1851. Published a penny weekly, "Tit-Bits," in 1881 that made him widely known and brought him a fortune. In 1891, with W. T. Stead, he began the publication of the "Review of Reviews," and the next year "The Strand." At different times he owned and controlled "The Wide World," "Woman's Life," "The Captain," "Fry's Magazine," "Country Life," "The Garden," "Ladies Field," and "Scholars Own." When W. W. Astor made a Tory organ of London's only Liberal evening paper, the "Pall Mall Gazette," Newnes bought the "Westminster Gazette" and employed the old staff of the "Pall Mall" to run it as a Liberal organ. A Liberal M. P. 1880-1895, and 1900-1910; created a Baronet 1895. Died 1910.

NEW NETHERLANDS, the collective name of the early Dutch settlements in what is now New York State.

NEWNHAM COLLEGE, an institution for the higher education of women at Cambridge, England. It may be said to have commenced in 1871, when the Newnham Hall Company opened a house for five resident women students. The numbers steadily increased, and in 1875 Newnham Hall was built, providing rooms for the principal, a lecturer, and 26 students. Scholarships were given by the London Companies and private friends, the library grew, a chemical laboratory and gymnasium were added, and the machinery of the college became more and more complete till, in 1879, the Newnham Hall Company was amalgamated with the Association for the Promotion of the Higher Education of Women. Additional land was acquired, and gradually three other halls were added. In 1919 there were 18 resident and numerous non-resident teachers and 240 students. In 1881 the University of Cambridge opened to students of Newnham its tripos and previous examinations, and also extended to them all the other scholastic privileges of the university, except that certificates only instead of degrees are granted to them.

NEW ORLEANS, a city and port of entry of Louisiana; on both sides of the Mississippi river, 110 miles above the delta, and on the Illinois Central, Yazoo and Mississippi Valley, Gulf Coast Lines, Louisiana Railway and Navigation Co., Texas and Pacific, Louisville and Nashville, Louisiana Southern, New Orleans and Lower Coast, Southern Pacific Railroad and Steamship Co., Southern Railway System, New Orleans and Great Northern, and New Orleans Public Belt railways, 700 miles S. of St. Louis. It is the most important city in population and trade in the Gulf States. Area 196 square miles; pop. (1890) 242,039; (1900) 287,104; (1910) 339,075; (1920) 387,219.

Municipal Improvements.—There is a waterworks system, established at a cost of $9,200,000. The reservoirs have a delivery capacity of 66,000,000 gallons; the water is distributed through 594 miles of mains; and the consumption averages 32,000,000 gallons daily. There are in all 905 miles of streets of which 330 miles are paved, and 218 miles of electric street railways. The city is lighted by electricity at an annual cost of about $230,000. The cost of the police department is about $526,000 per annum, and that of the fire department about $660,000. The annual white death rate for 1919 was 15.76 per 1,000.

Notable Buildings. — The principal public buildings are the United States Government Building; the United States Branch Mint; the Criminal Court and jail; the Cotton Exchange; the Court Houses; the Sugar Exchange; Board of Trade; Hebrew Athenæum; Howard Memorial Library; New Orleans Public Library; Masonic and Odd Fellows Hall; Y. M. C. A. Hall; Hotel Dieu; Tours Infirmary; Elks' Home; Washington Artillery Hall; Poydras Female Orphan Asylum; Charity Hospital; German Protestant Asylum; Jewish Widows' and Orphans' Home: St. Anna's Widows' Home; St. Vincent Orphan Asylum; the Shakespeare Almshouses; Association of Commerce Building; Cabildo; Confederate Memorial Hall; Isaac Delgado Museum; Isaac Delgado Trade School; Loyola University; Newcomb College; Tulane University; Postoffice.

Manufactories. — New Orleans has about 1,000 manufactories, with an annual output of $150,000,000. The leading articles include cotton goods, sugar, lumber, foundry products, sashes and blinds, chemicals, acids, etc. The combined storage capacity of the grain elevators is 7,670,000 bushels.

Commerce.—The total imports of the port of New Orleans in the calendar year 1919 amounted to $177,286,036; the exports amounted to $563,112,010, or a total of $740,398,046. Fifty-six steamship lines give the city direct connection with all the leading ports of the world.

Banks.—There were, in 1920, twelve banks, with about 30 branches. The exchanges in the Clearing House for the year ending Sept. 30, 1919, were $2,890,884,000.

Education.—At the close of the school year 1919-1920 there were 88 public school buildings, 1,310 teachers, and public school property valued at $4,300,000. The total enrolment in public schools for 1919 was 51,521, and in private and parochial schools 17,000 (est.). The average daily attendance was 35,218 for public schools. The institutions of higher education include the College of the Immaculate Conception, Tulane University, and its branch for women, Sophie Newcomb College, Loyola College, Straight University, Leland University, and the Southern and New Orleans Universities for Negroes.

Finances.—One June 30, 1919, the total bonded debt of the city was $39,564,936. The assessed valuations in 1917 were: Real estate, $268,454,199; personal property, $174,703,526; total $443,157,725; tax rate, $22.50 per $1,000.

History.—The French first occupied New Orleans under Jean de Bienville in 1718. It was made the capital of Louisiana in 1722. Forty years later it passed under the control of Spain when Louisiana was ceded to that country. The French again obtained possession of the province in 1800 and sold it to the United States in 1803. New Orleans was chartered as a city in 1804. On Jan. 8, 1815, it was the scene of a world-renowned battle in which General Jackson defeated the British. In 1862 Admiral Farragut forced it to surrender, and it was occupied by Union troops under General Butler, who was appointed military governor. The prosperity of the city was interrupted by the war, but it has grown very rapidly since 1866. A great industrial and cotton exposition was held here in 1884.

NEW ORLEANS, BATTLE OF, an engagement fought on Jan. 8, 1815, between a force of 12,000 British under Sir Edward Pakenham, and one of 6,000 Americans under Gen. Andrew Jackson. The latter were in a strongly intrenched position and awaited Pakenham's assault on their lines. The battle lasted only 25 minutes, when the British fled, leaving behind them 2,600 killed and wounded. Pakenham was among the slain. The Americans' loss was only 8

killed and 13 wounded. It was the last battle of the War of 1812.

NEW ORLEANS UNIVERSITY, a coeducational institution in New Orleans, La.; founded in 1873 under the auspices of the Methodist Episcopal Church; reported at the close of 1919: professors and instructors, 17; students, 400; volumes in the library, 10,000; grounds and buildings valued at $150,000; income, $35,000; endowment, $100,000; productive funds, $93,000; president, Charles M. Melden, D. D.

NEW PHILADELPHIA, a city of Ohio, the county-seat of Tuscarawas co., 96 miles S. of Cleveland, on the Tuscarawas river, the Ohio canal, and the Baltimore and Ohio and the Pennsylvania railroads. It is an important mining center and has manufactories of steel, sewer pipe, flour, brick, etc. The city contains a park, a public library, several institutions and a court house. Pop. (1910) 8,542; (1920) 10,718.

NEWPORT, a city in Campbell co., Ky.; at the confluence of the Licking and Ohio rivers, and on the Louisville and Nashville, and the Chesapeake and Ohio railroads; opposite Cincinnati, O. Two bridges here cross the Ohio, and two the Licking river, connecting Newport with Cincinnati and Covington. The city contains a United States military post, waterworks, National banks, gas and electric lights, high schools, parks, banks, municipal buildings, Masonic Temple. It has iron mills, manufactories of watch cases, nuts, bolts, carriages, pianos, rails, screens, and carriage supplies. Pop. (1910) 30,309; (1920) 29,317.

NEWPORT, a city, port of entry, county-seat of Newport co., and until 1900 one of the capitals of Rhode Island; on the island of Rhode Island, in Narragansett Bay, and on the New York, New Haven and Hartford railroad; about 30 miles S. E. of Providence. Its principal importance is as a summer resort, to which the coast near by is wholly given up. The bathing facilities are unsurpassed. There are many beautiful summer residences, and during the fashionable season Newport is filled with the wealthiest society of Boston, New York, and other cities. The harbor, one of the best on the coast, is defended by Fort Adams, one of the strongest forts in the United States. The locality has many natural curiosities, including the Hanging Rocks, Spouting Cave, and the Glen, a chasm 50 feet deep. The United States Naval War College, United States Training Station, Torpedo Station, Naval Hospital, and Marine Barracks are located here, and there are besides a public library, Newport Hospital, Hazard Memorial School, the Round Tower, or Old Stone Mill in Touro Park; the Vernon house, which was Rochambeau's headquarters, built in 1780, etc. During the World War Newport was an important naval station. Newport has manufactories of flour, cotton goods, copper, brass, oil, etc. Pop. (1910) 27,149; (1920) 30,255.

NEWPORT, a town in Monmouthshire, England, 145 miles W. of London. Being one of the principal outlets for the produce of the extensive collieries and iron and steel works in the vicinity, its shipping trade has of late years greatly increased, and with it, as a result, its dock accommodation, which now covers more than 80 acres. Newport has manufactures of india-rubber, gutta-percha, and railway and telegraph plants and wagons, and several important brass and iron foundries are in operation, as well as breweries and pottery works. On Nov. 4, 1839, the town was the center of a Chartist outbreak. Pop. (1917) 82,709.

NEWPORT NEWS, a city, port of entry, and county-seat of Warwick co., Va.; on the James river, Hampton Roads, and the Chesapeake and Ohio railroad; 14 miles N. of Norfolk. Newport News was one of the most important parts of the United States during the World War. Over 275,000 American troops embarked there for overseas, together with a vast quantity of supplies. It was also a great shipbuilding center, and in 1918-1919 many naval and merchant vessels were constructed in its yards. The bank deposits in 1919 were over $15,000,000. The city has several important educational institutions, an excellent dock system, grain elevator, fire system for schools, and is one of the most progressive cities in the country. It has National and State banks, electric railroads, several daily and weekly periodicals, knitting mills, iron works, an extensive foreign export trade. Pop. (1910) 20,205; (1920) 35,596.

NEW PROVIDENCE, chief of the Bahama Islands. Though not the largest of the Bahama group, being 20 miles long, it contains Nassau, the seat of government. It is 170 miles from Florida, is flat, with lagoons and good harbor. Pop. about 15,000.

NEW ROCHELLE, a city of New York in Westchester co., about 16 miles

from the Grand Central Station, New York City. It is on Long Island Sound and on the New York, New Haven and Hartford, and the New York, Westchester and Boston railroads. It is one of the best known suburbs of New York City. There is a public library, a high school, a hospital, and several private schools. New Rochelle was for many years the home of Thomas Paine. It has important manufacturing interests. Pop. (1910) 28,867; (1920) 36,213.

NEWRY, a port and parliamentary borough of Ireland on the Newry river; 38 miles S. S. W. of Belfast. A canal connects it with Carlingford Lough and with Lough Neagh. The port does a large trade with Glasgow and Liverpool in cattle and other agricultural produce. Flax spinning and weaving, with rope and sail making, tanning, and granite-polishing, are the industries. The place dates from the 12th century; its castle was taken by Edward Bruce in 1318. Pop. about 12,000.

NEW SOUTH WALES, the oldest of the colonies of Great Britain in Australia, and since Jan. 1, 1901, a state in the Australian commonwealth. At one time it comprised the E. half of Australia, but is now bounded on the N. by Queensland, on the S. by Victoria, on the E. by the Pacific Ocean, and on the W. by South Australia; area, 310,700 square miles. A mountain range (the Great Dividing Chain) extends from N. to S. nearly parallel to the coast, at the distance of from 30 to 50 miles inland. The highest summits are Mount Kosciusko, Mount Clarke, and Mount Townshend in the S. E. (7,353 feet), the last being the highest mountain in the colony and in Australia. The coast line, 700 miles in length, presents, in general, bold perpendicular cliffs of sandstone in horizontal strata. Among the indentations of the coast are Port Stephens, Port Hunter, Broken Bay, Port Jackson, Botany Bay, Jervis Bay, Sussex Haven, and Twofold Bay. The most important rivers are on the W. side of the great watershed, the chief being the Murray, the Murrumbrigee, the Lachlan, and the Darling, the Murray receiving the waters of the others and carrying them to the sea through South Australia. The Murray partly belongs also to Victoria, as it forms the boundary between New South Wales and that colony, and the Darling is thus the chief river of New South Wales. On the E. side of the watershed are no large rivers, the chief being the Hunter (300 miles) and the Hawkesbury (330 miles). The volume of the rivers depends greatly on the season, and their utility for inland navigation is much impaired by their shallowness. As a general rule the prevailing rock on the E. side of the mountains is sandstone, and on the W. granite. Much of the sandstone belongs to the Carboniferous system, and is accompanied with workable seams of excellent coal. The coal fields extend over an area of 10,000 acres, with more than 91 mines. The state exports considerable quantities of coal to the W. coast of North and South America. Copper ore of the richest quality and tin exist in large quantities, and iron is very generally distributed in all parts of the state.

Several varieties of precious stones have been found, notably opals. As the area of the state extends over 11° of latitude, and as it contains a good deal of elevated ground, nearly every variety of climate is to be found. In the N. the climate is tropical, while on the tablelands severe frost is not uncommon. The interior plains are very dry, while the coast districts have abundant rains. Though the hot winds of the warm season are annoying, they are not unhealthy, while storms and electrical disturbances are comparatively rare. About one-fourth of the area of the state consists of forest lands, which in 1887 were taken under the care of the government by the creation of a Forest Conservation Department. The scarcity of water renders much of the surface far better adapted for pasturage than for agricultural purposes, though where the necessary moisture is present heavy crops are obtained. The total imports of New South Wales in 1917-1918 amounted to £27,975,582, and the exports to £36,216,779. Gold is found in all parts of the state, although production has fallen off in recent years. There was produced in 1917 85,954 fine ounces, valued at £349,038. The silver production for the same year amounted to 1,782,004 fine ounces, valued at £328,251, together with 324,881 tons of silver lead ore and metal valued at £4,164,324. There were produced in 1917 6,576 tons of copper, valued at £814,154, and the coal production in 1917 was 8,292,867 tons, valued at £4,422,740. The manufacture of coke is also an important industry. There were in 1917 5,163,030 acres under agricultural cultivation. The chief products are wheat, of which about 37,000,000 bushels were produced in 1917; corn, barley, and oats. The value of the manufactured output in 1917 was £85,944,320. There were in the state, in 1918, 38,000,000 sheep, 2,900,000 cattle, 750,000 horses, and

300,000 pigs. The production of wool in 1917 was 270,525,000 pounds.

Sydney is the capital; other towns are Newcastle, Bathurst, Goulburn, Paramatta, Maitland. There is no established religion. Among the religious sects the Church of England, Roman Catholics, Wesleyan Methodists, Lutherans, and Presbyterians hold the chief place. Education is compulsory between the ages of 7 and 14. The educational system comprises lower and higher public schools, evening schools, etc., at the top being the University of Sydney. With it are affiliated three theological colleges, for Church of England, Presbyterian, and Roman Catholic students respectively.

New South Wales was discovered by Captain Cook in 1770, and founded as a penal settlement (at Botany Bay) in 1788. One of its early governors was the notorious Captain Bligh, who was deposed by the colonists in 1808. The most important events in its history since convict immigration ceased in 1840 are the establishment of representative institutions in 1843; the erection of Victoria into a separate colony in 1850; the important discovery in May, 1851, of extensive gold tracts; the rush to the diggings, with consequent great increase in population and prosperity; and the incorporation of the colony in the Australian commonwealth in 1901. The first railway, from Sydney to Paramatta, was opened in 1855. Among more recent events are the Sydney Exhibition held in 1879, and the Intercolonial Conference held at Sydney in 1883. The colony celebrated its centenary in January, 1888. On Jan. 1, 1901, Sydney was the scene of the inauguration of the first governor-general of the new commonwealth, Lord Hopetoun. Pop. about 1,700,000.

NEWSPAPER, a printed paper published at intervals of hours, days, or weeks, containing intelligence of past, current, or coming events; and at the option of the conductors presenting also expressions of opinion by editorial and other contributors and the business announcements of advertisers. The prototypes of the newspaper are supposed to be the journals called "*Acta Diurna*," which were the bulletins sent from Rome, several centuries before the Christian era, in which accounts were given of the progress of the imperial arms. These journals were communicated by the generals who received them to the officers under their command, and thus their contents became known throughout the army. The "*Acta Diurna*" seem, however, to have recorded other than military matters, *e. g.*, trials, punishments, deaths, sacrifices, prodigies. The Peking "Gazette," the oldest daily in the world, was first issued about A. D. 1350. This is still in existence, and is an official journal, forming a pamphlet of 20 to 40 pages of coarse paper. The "Notizie Scritte," published monthly in Venice, in 1562, is said to have been the first Italian newspaper; but it was in manuscript, not printed. Its price was a small coin called gazetta; hence the word gazette. The first numbered sheets appeared in 1612. In the British Museum there are seven copies of the "English Mercurie" of 1688, but their authenticity is questioned. A publication entitled the "Relations" was published in England as early as 1462, and in 1527 there was one called "New Tidings," but neither of these presented more than a single piece of intelligence. The earliest English newspaper in the true sense of the word was Butter's "Weekly News," of 1622. Butter's success led to many imitations, and newspapers, such as they were, soon became common. The publication of newspapers without license was prohibited in the reign of Charles II., and an office was created called Licenser of the Press. Advertisements first appeared in English newspapers in 1652. "The Public Intelligencer" appeared in 1663, and "The London Gazette" in 1665. The first daily newspaper was the "Daily Courant," of London, the date of whose first issue was 1702; there is, however, a legend of a daily paper called the "Postboy," in 1695. Cologne seems to have had a newspaper as early as 1499, called the "Chronicle," and Frankfort claims as the father of journalism Egenolf Emmel, who, in 1615, is believed to have established a daily paper entitled "Die Frankfurter Oberpostamt Zeitung." France's first newspaper, the "Gazette de France," appeared May 30, 1631, Sweden's in 1644, Holland's in 1656, Russia's in 1703, Spain's in 1704, Turkey's in 1795 (printed in French). The first newspaper on the American side of the Atlantic, "Publick Occurrences both Foreign and Domestick," was a monthly, first issued in Boston, Mass., by Richard Pearce, Sept. 25, 1690; in 1702 appeared "The Boston Newsletter," and in 1729 Benjamin Franklin's "Pennsylvania Gazette."

The development of the newspaper has kept pace with industrial and social developments in the United States. Practically every city with a population of 5,000 or over has one or more daily papers. A gradual change, however, has

taken place in the relative importance of the editorial and the news sections of newspapers. In the days of Greeley, Dana, Bennett, Raymond, and other great editors, the editorial page had great influence in molding popular opinion. In the latter days, however, the tendency has been to subordinate the editorial features of the paper to the news section, so that it is probable that the influence of editorial writing as a molder of popular opinion has waned.

Newspapers in the larger cities have obtained enormous circulation, in some cases exceeding 500,000. This has been rendered possible by the use of wood pulp in making paper. On the other hand it has also resulted in a shortage of wood pulp and a corresponding shortage of print paper. This became particularly acute during the war, when newspapers were hard pressed to obtain paper enough for their use. A large portion of the pulp from which the paper is made is obtained from Canada.

Partly as a result of this situation and partly from other reasons, a tendency has developed for the consolidation of papers in the larger cities. The most notable instance of this was the consolidation of the New York "Herald" and the New York "Sun" in 1920, following the death of James Gordon Bennett, the former proprietor of the "Herald." The "Herald" was purchased by Frank A. Munsey, who was also the owner of the "Sun." Mr. Munsey also purchased in November, 1920, the "Baltimore American," one of the oldest of American newspapers.

NEW SWEDEN, the former name of the territory lying between the English colony of Virginia and the Dutch colony of New Netherlands. The Swedes founded a settlement here in 1638.

NEWT, a small reptile of the family *Salamandridæ*, of which there are many varieties, the principal one being termed the great water newt, *Triton cristatus*. This specimen, when it is full-grown, measures about six inches in length, and in its appearance greatly resembles the salamander. On the back the color is a dark brown; the sides are speckled with spots, and the under-surface of the body is a bright orange, variegated with black patches. The head is rather small, and the eyes are of a bright golden hue; the tail is flattened in form, and has thin edges at the extremities; and the limbs are short, the fore-feet being divided into four, and the hind into five toes. The newt inhabits shady places and stagnant waters, and lives principally on insects, of which it consumes an immense quantity. Besides the great water newt there is the common water newt, *Triton aquaticus*, found in the Atlantic States, which, in its habits and appearance, so closely resembles the former, as not to need a distinct description. Other species, from 4 to 12 inches long, are also found in the United States.

NEW TESTAMENT. See BIBLE.

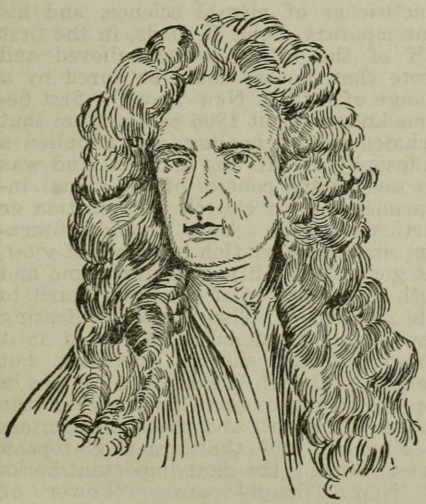
NEW THOUGHT, a name commonly used to describe the belief in the power of the spirit to create and control conditions and circumstances by mental causes. New Thought is based on old truths maintained for ages, but to many it offers a new viewpoint on the conduct of life. Metaphysical healing as demonstrated in mental science is based on the same curative methods as New Thought. Unlike Christian Science, it does not deny the existence of matter, while affirming the reality of the spirit. Phineas Parkhurst Quimby, the first practitioner of mental science, and his contemporary, John B. Dods, in the first half of the 19th century believed and wrote that disease could be cured by a change of belief. New Thought first became known about 1906 as a system that included mental healing, and supplied a philosophy of life and conduct, and was opposed to the control of individual independence by a church organization or particular faith. New Thought literature displays variation in points of view, but general hostility to materialism, and faith in the power of the inner spirit to rule the senses. The number professing New Thought cannot be estimated as it includes many church members, but there are between 300 and 400 centers in the United States and Canada where the system is taught, and there are centers in England and the larger European cities. Among the most important books on New Thought are: "Power of Silence" (H. W. Dresser, 1904); "New Thought Simplified" (Henry Wood, 1904); "A New Alinement of Life" (R. W. Trine); "Increasing Your Mental Efficiency" (E. H. Williams).

NEWTON, a city of Kansas, the county-seat of Harvey co., 27 miles N. of Wichita, on the Missouri Pacific and the Atchison, Topeka, and Santa Fé railroads. It is the center of an important farming and stock-raising region and has manufactories of flour and machinery. There is a library, hospitals, parks, and Bethel College. Pop. (1910) 7,861; (1920) 9,781.

NEWTON, a city in Middlesex co., Mass.; on the Charles river, and on the Boston and Albany railroad; 7 miles W.

of Boston. It comprises 13 villages; contains the Newton Theological Institution (Bapt.), the Allen School for Boys, the Lasell Female Seminary, West Newton Classical School, public library, Eliot Memorial, high school, and several National and savings banks, and has gas and electric lights, manufactures of hosiery, shoes, silk, rubber, machinery, paper, carriages, cordage, etc. Pop. (1910) 39,806; (1920) 46,054.

NEWTON, SIR ISAAC, an English philosopher; born in Woolsthorpe, Lincolnshire, England, Dec. 25, 1642 (old style). In 1654 he was sent to Grantham School, and at the age of 18 removed to Trinity College, Cambridge. After going through Euclid's Elements, he proceeded to the study of Descartes' Geometry, with Oughtred's Clavis and Kepler's Optics, in all of which he made marginal notes. It was in this early course that he invented the method of



SIR ISAAC NEWTON

fluxions, which he afterward brought to perfection, though his claim to the discovery was unjustly contested by Leibnitz. At the age of 22 Newton took his degree of B. A., and about the same time he applied himself to the grinding of object-glasses for telescopes. Having procured a glass prism in order to investigate the phenomena of colors, the result of his observations was his new theory of light and colors. It was not long after this that he made his discovery of the law of gravitation; but it was not till 1687 that the Newtonian system was first published in his great work, the "Mathematical Principles of Natural Philosophy." On his return to the university, in 1667, he was chosen fellow of his college, and took his degree of M. A. Two years afterward he succeeded Dr. Barrow in the mathematical professorship. In 1691 he was chosen fellow of the Royal Society, to which body he communicated his theory of light and colors, with an account of a new telescope invented by him, and other interesting papers. When the privileges of the University of Cambridge were attacked by James II., Newton was appointed to appear as one of the delegates in the High Commission Court. He was next chosen a member of the Convention Parliament, in which he sat till it was dissolved. In 1696 he was made Warden of the Mint, and afterward Master; which latter place he held till his death. The reformation of the English coinage was largely his work. In 1703 he was chosen president of the Royal Society, in which station he continued 25 years. He was also a member of the Academy of Sciences at Paris, having been elected in 1699. In 1704 he published his treatise on "Optics"; but the whole merit of this extraordinary work was not at first appreciated. In 1705 he received the honor of knighthood from Queen Anne. He died in Kensington, near London, March 20, 1727. In 1731 a monument to his memory was erected in Westminster Abbey where his remains were buried.

NEWTON, JOSEPH FORT, clergyman. Born in Decatur, Tex., in 1876, he studied at the Southern Baptist Theological Seminary, Louisville, Ky., and was ordained Baptist minister in 1893. He was pastor of the 1st Baptist Church, Paris, Tex., in 1898, and associate pastor of a non-sectarian church at St. Louis, 1898-1900. He founded and presided over the People's Church, Dixon, Ill., from 1901 to 1908. Was Universalist pastor at Cedar Rapids, Ia., 1908-1916, and has been at the City Temple, London, England, since 1916. His works include: "David Swing, Poet Preacher" (1909); "Abraham Lincoln" (1910); "The Eternal Christ" (1912); "The Builders, A Story and Study of Masonry" (1914); etc.

NEWTON ABBOT, a market-town of Devonshire, England; 15 miles S. of Exeter. Its principal industry is pottery, there being abundant clay deposits. Ford House, a good Tudor building, has lodged both Charles I. and William of Orange, who here in 1688 was first proclaimed king. Pop. about 15,000.

NEWTON THEOLOGICAL INSTITUTION, a college for instruction in theology founded by the Baptist

Churches in 1825 at Newton Center, Mass. While the instruction is under Baptist auspices, students from any denomination may be admitted. The course is three years and leads to the degree of Bachelor of Divinity. The grounds and buildings are valued at $700,000, while the college has an endowment of $800,000. The enrolment of students numbered 70 in 1915 with 8 instructors.

NEW ULM, a city of Minnesota, the county-seat of Brown co., 88 miles S. W. of St. Paul, on the Minnesota river and on the Chicago and Northwestern and the Minneapolis and St. Louis railroads. It is the center of an important agricultural and stock-raising region and has important trade interests. There are manufactories of flour, cigars, marble, bricks, machine products, pipe organs, etc. The city has a handsome court house, hospitals, and public schools. It is the seat of Martin Luther College. Pop. (1910) 5,648; (1920) 6,745.

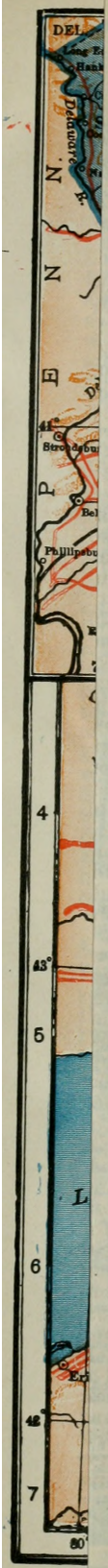
NEW WESTMINSTER, a city and former capital of British Columbia; on the Fraser river; 15 miles from its mouth, and 60 miles N. N. E. of Victoria, on the Canadian Pacific, the Great Northern, and the Canadian Northern railways. It has the residences of Episcopal and Roman Catholic bishops, a convent, Roman Catholic and Methodist colleges, the Dominion Penitentiary, Provincial Asylum for the Insane, sawmills, and great salmon-canning establishments. There are also manufactories of wire and nails, gasoline engines, etc. Pop. about 22,000.

NEW WORLD, THE, the Western Hemisphere. This name is of very early origin, for Ferdinand inscribed on the tomb of Columbus, "To Castile and to Leon Columbus gave a new world."

NEW YEAR'S DAY, the day on which the year commences in the Gregorian calendar; the 1st of January; usually called New Year, or New Year's. The celebration of the commencement of the new year dates from high antiquity. The Jews regarded it as the anniversary of Adam's birthday, and celebrated it with splendid entertainments; a practice which they have continued down to the present time. The Romans also made this a holiday, and dedicated it to JANUS with rich and numerous sacrifices; the newly elected magistrates entered upon their duties on this day; the people made each other presents of gilt dates, figs, and plums; and even the emperors received from their subjects New Year's gifts, which at a later period it became compulsory to bestow. From the Romans the custom of making presents on New Year's Day was borrowed by the Christians, by whom it was long retained; but even in those countries where it has lingered longest, it is falling rapidly into desuetude.

NEW YORK, a State in the North Atlantic Division of the North American Union; bounded by Ontario, Vermont, Massachusetts, Connecticut, New Jersey, Pennsylvania, Lake Erie, Lake Ontario, Long Island Sound, and the Atlantic Ocean; one of the original 13 States; number of counties, 62; capital, Albany; area, 47,620 square miles; pop. (1890) 5,997,853; (1900) 7,268,012; (1910) 9,113,279; (1920) 10,385,227.

Topography.—The Adirondack system lies in the N. E. corner, W. of Lake Champlain, and contains the only great forest remaining as a public domain within the boundaries of the State. Its highest peaks are Mount Marcy, 5,379 feet; Mount MacIntyre, 5,183 feet; and Haystack, 4,919 feet. Other high peaks are Skylight, Whiteface, Clinton, Dix, Baldface, and Hopkins. S. of the Adirondacks lie the Catskills, noted for their scenic beauty, and as a summer resort. These mountains form the termination of a chain extending into the State from New Jersey, and are a continuation of the Blue Ridge range. Another branch enters the State at its S. boundary and terminates in the Highlands on the Hudson. These mountains range in altitude from 1,500 to 3,500 feet. Among the more prominent are Beacon Hill, Bull Hill, and Butter Hill. A third range extends N. as far as the Mohawk, and reappearing on the N. side of the river continues toward Lake Champlain, connecting with the Adirondacks. The W. portion of the State is undulating, descending in rolling terraces to Lake Ontario. The river systems are divided into two divisions, one flowing N. to the Great Lakes, and St. Lawrence, and the other reaching the Atlantic by the Hudson. The Hudson river, the most important in the State, rises in the Adirondack Mountains and is navigable for 150 miles. The St. Lawrence forms 100 miles of the Canadian boundary. Other important rivers are the Mohawk, entering the Hudson at Cohoes, the Susquehanna, formed by the Chenango and Tioga, the Delaware, Niagara, Black, Genesee, Oswego, and Allegheny. The lakes are numerous and noted for their beauty. One half of Lakes Ontario, and Champlain, and the E. end of Lake Erie are property of the State. Lake George, S. of Lake Champlain, is an extensive

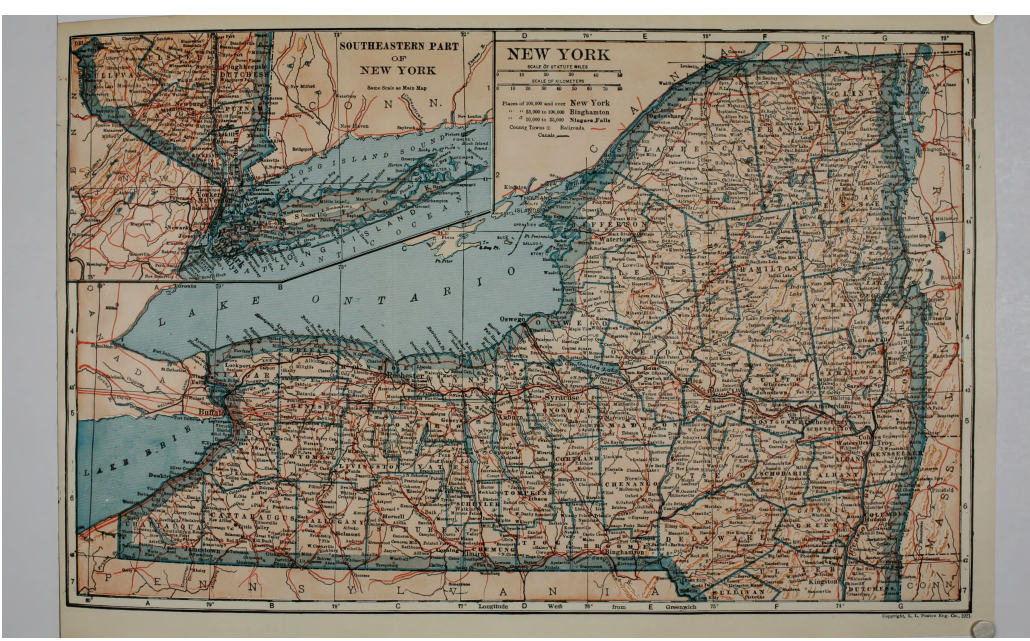


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SCALE OF STATUTE MILES
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LAKE ONTARIO
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Longitude West from Greenwich
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sheet of water and is a noted resort. The central portion of the State has an extensive lake system, containing Seneca, Cayuga, Oneida, Keuka, and Canandaigua lakes. The Adirondack region is full of lakes, including Long, Schroon, Upper and Lower Saranac, Placid, and Raquette. Chautauqua, in the S. W., and Saratoga and Otsego in the E. are among the many pleasure resorts. The waterfalls in the State are numerous, and include Niagara Falls, Trenton Falls, Genesee Falls, Portage, Taghkanie, and those near Ithaca, and in Watkins Glen. There are many large islands, Manhattan, containing the greater part of New York City, Long Island, Staten Island, Coney Island, and Fire Island are on the S. Shore; and the St. Lawrence river contains over 700 small islands belonging to New York. The entire State is noted for its scenery; the Palisades, Highlands, and Catskills on the Hudson, Lake George, and Lake Champlain, the islands in the St. Lawrence, numerous waterfalls, chasms, inland lakes, and glens, all abound in historical traditions and are of great interest to the tourist. The chief harbors are New York, on New York Bay; Dunkirk and Buffalo on Lake Erie; Tonawanda and Lewiston, on Niagara river; Genesee, Sodus, Oswego, Sacketts Harbor, and Cape Vincent on Lake Ontario; Ogdensburg on the St. Lawrence; Rouse's Point, Plattsburg, and Whitehall, on Lake Champlain; and Sag Harbor on the E. end of Long Island.

Geology.—Nearly all the geological formations are present in New York. The Archæan is represented in the Adirondacks and the Highlands on the Hudson by gneisses and granites. The Palæozoic constitutes four-fifths the area of the State and is represented by schists, slates, and metamorphosed rocks in the E. and by massive sandstones in the Catskills. The Palæozoic is represented by the Cambrian, Silurian and Devonian periods. The Triassic and Jurassic are represented by Newark sandstones and shales, in Rockland county; and the Pleistocene, by glacial drift, and lacustrinea and estuarine clays covering a great part of the State. The Pleistocene ice sheet covered the entire State and is responsible for many of the details of topography.

Soil and Productions.—About one-half the area of the State is adapted to cultivation. The principal forest trees are the maple, oak, pine, elm, hickory, beech, birch, ash, hemlock, spruce, cedar, poplar, willow, whitewood, chestnut, basswood, butternut, sycamore, locust, ailantus, black walnut, yew, and sumach. Agriculture is carried on to a large extent, New York being one of the leading agricultural States in the Union. The chief agricultural crops in 1919 were as follows: corn, 35,260,000 bushels, valued at $58,532,000; oats, 29,580,000 bushels, valued at $24,551,000; wheat, 11,178,000 bushels, valued at $24,32,000; hay, 6,539,000 tons, valued at $134,870,000; beans, 1,450,000 bushels, valued at $7,105,000; potatoes, 39,567,000 bushels, valued at $57,372,000. Much attention is paid to dairy and market farming, and the State ranks first in the production of buttre and milk.

Mineral Production.—New York ranks among the first of the States in the production of iron ore. In 1918 there were shipped from the iron mines of the State 889,970 long tons of iron ore, valued at $5,802,807. The value of the clay products amounts to over $12,000,000 annually. Salt is an important mineral product. Over 2,000,000 tons are produced annually with a value of about $6,000,000. The value of the cement products is about $7,000,000 annually. Other important mineral products are aluminum, ferro alloys, petroleum, sand and gravel. The total value of the mineral production of the State in 1917 was $52,123,552.

Manufactures.—The river systems with their extensive water power, the proximity of the Pennsylvania coal fields, and the facilities for transportation make New York one of the most prominent manufacturing States. The following figures relate to the census of 1914. Number of establishments, 48,203; wage earners, 1,057,857; capital invested, $3,334,278,000; amount paid for materials, $2,108,607,000; value of products, $3,814,661,000. Niagara Falls gives enormous power which is turned into electricity and used in the manufacture of aluminum, caborundum, and machinery. Schenectady is famous for its locomotives and electrical apparatus, Balston Spa for its paper mills, Elmira for its car shops, Oswego for flour mills, Kingston for hydraulic cement, Haverstraw for bricks, Rochester for optical goods, Syracuse for salt, and Brooklyn, New York City, Buffalo, Utica, Albany, Troy, Binghamton, Yonkers, and Long Island City for general manufactures. The principal articles of manufacture include cotton, woolen, and silk goods, boots and shoes, clothing, tobacco, liquors, foundry and machine shop products, paper, flour and grist, locomotives, electrical goods, machinery, furniture, household and agricultural implements, toys and novelties, leather goods, and glass.

Banking.—On Oct. 31, 1919, there were reported 485 National banks in operation, with an aggregate capital stock of $179,125,000; outstanding circulation, $71,646,134; and United States bonds and deposits, $76,302,400. There were also 210 State banks, with $39,603,000 in capital, $61,911,000 in surplus; and $1,270,298 in resources; 89 private banks, with $1,521,000 in capital, $2,868,000 in surplus, and $23,358,000 in resources; 141 mutual and stock savings banks, with $2,179,034,000 in savings deposits, $181,127,000 in surplus, and $2,367,040,000 in resources; and 101 loan and trust companies, with $136,043,000 in capital, $206,490,000 in surplus, and $3,654,027,000 in resources. The exchanges at the various clearing houses in the year ending Sept. 30, 1919, were as follows: New York, $214,703,444,000; Buffalo, $1,429,378,000; Rochester, $454,421,000; and Albany, $252,248,000.

Education.—The total school population of the State in 1918 and 1919 was 2,386,836. There were registered in the public schools 1,672,311 pupils. The average attendance was 1,310,826. The total expenditures for public schools during that year amounted to $92,334,179, and the receipts to $133,833,419. The principal colleges include Columbia University, New York University, Manhattan College, College of the City of New York, and St. Francis Xavier College in New York City; Hobart College at Geneva; University of Buffalo at Buffalo; Cornell University at Ithaca; Union College at Schenectady; Syracuse University at Syracuse; University of Rochester at Rochester; Hamilton College at Clinton; and Rensselaer Polytechnic Institute at Troy. The women's colleges include Vassar College at Poughkeepsie; Barnard College at New York City; Wells College at Aurora; Elmira College at Elmira; and Teachers' College at New York City.

Churches.—The strongest denominations in the State are the Roman Catholic, Methodist Episcopal, Regular Baptist, Prostestant Episcopal, Reformed Jewish, Congregational, Lutheran General Council, and Lutheran Synodical Conference.

Railways.—The total railway mileage of the State in 1919 was about 8,500. The roads having the longest mileage are the New York Central, the Erie, the Delaware and Hudson, and the Lehigh Valley.

Finances.—The assessed value of real and personal property in the State in 1919 was $12,758,021,934. The direct taxes levied in that year amounted to $13,523,503. The ordinary receipts amounted to $80,408,634, and the ordinary expenditures to $78,941,313. The excess receipts over the expenditures was $1,492,232.

Charities and Corrections. — Among the most important charitable and correctional institutions in the State are the Soldiers' and Sailors' Home at Bath, Boys' Reformatory at Elmira, House of Refuge at Randalls Island, Institution for Feeble-Minded at Syracuse, Craig Colony for Epileptics at Sonyea, Reformatory for Women at Bedford Hills. The total cost for the support of charitable and correctional institutions in the State is about $3,000,000 annually.

State Government.—The governor is elected for a term of two years, and receives a salary of $10,000 per annum. Legislative sessions are held annually, commencing on the first Wednesday in January, and the length of the session is unlimited. The Legislature has 51 members in the Senate and 150 in the House. There are 43 Representatives in Congress. In 1920 the governor was a Democrat, and the Legislature Republican.

History.—The first explorations of New York were made by Champlain and Henry Hudson in 1609, Champlain coming down from Canada, as far as the lake which bears his name, and Hudson, discovering New York Bay, and sailing up the Hudson river. The region surrounding the Hudson was claimed by the Dutch who called the place New Netherlands, sending out numerous colonists, who explored the country along the Hudson and Long Island Sound, and founded trading posts at Fort Orange (now Albany), and at New Amsterdam, on Manhattan Island, the latter the present city of New York. The Dutch settlements were invaded by the English from Connecticut, and by the Swedes in Delaware. The English claimed New Netherlands as part of Virginia, priorly discovered by Cabot, and Charles II., in 1664, granted a charter of all the lands lying between the Hudson and the Delaware to his brother, the Duke of York. In August of the the same year the whole country passed into the possession of the English, who gave the name of New York to New Amsterdam, and that of Albany to Fort Orange. When the Duke of York ascended the English throne as James II., the government became an appendage to the crown, and was administered by viceroys bearing the title of governor. In 1684 Governor Dongan concluded an offensive and defensive treaty with the Indians; and from that time forward the English became their allies and fast friends. The peace of Ryswick in 1697, terminating the war

between England and France, Count Frontenac, the French governor of Canada at the time, directed his force against the Five Nations. This proceeding was frustrated by the English governor of the province, who supported the Indians. The great conflict between England and France to decide the sovereignty of America broke out in 1754. In 1756, the French destroyed Oswego; and, in the following year, Fort William Henry capitulated to the French, when the English garrison was massacred by the Indian allies of the victors. In 1758 General Abercrombie was defeated at Ticonderoga, and Colonel Bradstreet took Fort Frontenac. In 1759 Niagara surrendered to General Prideaux and Sir William Johnson, and Ticonderoga and Crown Point were abandoned, leaving no French troops within the limits of the colony. In 1775 the Revolutionary War broke out, and in February, 1776, an American force took possession of New York City, which they held till the defeat at Long Island in August. In 1783 New York City was evacuated by the British. The first constitution of the State was adopted in 1777, and was successively revised in 1801, 1821, 1846, 1877. In 1788 New York adopted the Federal Constitution. The National Government was first located in New York City, which was the State capital till 1797. During the War of 1812 important events took place on the N. boundary, along Lake Ontario, the Niagara river, and on Lake Champlain. Slavery was abolished in 1817. Steamboat navigation was begun on the Hudson in 1807, and in 1825 the Erie Canal was completed from the Lakes to the Hudson. New York took an active part in the Civil War, supplying large numbers of troops to the army. Since the close of the war rapid steps of progress have been made, and the State has attained a position which gives it a fair claim to the title of Empire State.

NEW YORK BARGE CANAL, a gigantic engineering construction, which connects the Great Lakes with the Atlantic Ocean. The term canal is employed in a more extended sense than usual, as it includes not only the artificially created waterway, but the intervening lakes and rivers which are utilized as links in the system.

There are four main branches of the canal, the largest or Erie branch, which, starting at Buffalo, extends across New York State until it joins the Hudson; the Oswego branch which extends from midway on the line of the Erie to Lake Ontario; the Champlain, running from the head of Lake Champlain and tapping the eastern terminus of the Erie, and the Cayuga and Seneca, which extends from the Erie to the lakes of those names.

The Barge Canal is really an enormous development of the old Erie Canal, the usefulness of which had been steadily dwindling because of its lack of adaptation to the demands of modern commerce. Various measures for its improvement proved simply makeshifts. The locks, for instance, were lengthened in 1884, but this measure was inadequate to solve the problem. The first radical step in the line of recasting the whole system was taken in 1894, by an article of the Constitutional Convention held in that year, submitting to the people a proposition for its enlargement. It was found, however, that this was like sewing new cloth on an old garment, and in 1900 the whole matter was taken up in earnest, and after overcoming determined opposition an expenditure of $101,000,000 for the canal was authorized in 1903 by a popular vote. Actual construction was not under way, however, until 1905, and in the interval since that date many additional millions have been required to bring the work to completion.

The entire length of the Barge Canal is 801.3 miles. Of this, 358.7 miles is made up of the lakes and rivers along its course, and 442.6 miles represent artificial construction. The dimensions of the canal, although the minimum size is fixed by law, vary considerably. The artificial channel is 75 feet wide at bottom and 123 to 171 feet wide at the surface. The width is from 150 to 200 feet in the natural waterways. The depth is 12 feet.

The operation of the locks is electrical. The locks are built of concrete, both sides and floor, except where natural rock makes this unnecessary. Terminal and dockage facilities are located at more than fifty points along the canal, and legislation has been adopted that secures connection at desired places between the canal and adjacent railway lines. How important this gigantic waterway promises to prove to the public is indicated by the fact that three-fourths of the population of the State, whose products demand transportation, live within half an hour's walk of the Barge Canal system. The total cost exceeds $140,000,000.

NEW YORK, a city in southern New York; coextensive with New York, Bronx, Kings, Queens, and Richmond counties; on New York Bay, the Hudson and East rivers, Long Island Sound and the Atlantic Ocean; the first city in the United

States in population and commercial importance, second in the world in population, and first in commercial importance; connected with all parts of the world by railroads and steamship lines; 232 miles S. W. of Boston, 915 miles E. of Chicago, and 226 miles N E. of Washington; area, 326.9 square miles; pop. (1890) 2,507,414; (1900) 3,437,202; (1910) 4,776,883; (1920) 5,620,048.

Topography.—The city is divided into five boroughs: Manhattan, consisting of Manhattan Island, Governor's Island, Bedloe's Island, Ellis Island, Blackwell's Island, Randall's Island, Ward's Island, and Oyster Island; Bronx, consisting of all that portion of the city lying N. or E. of the Harlem river, between the Hudson and the East rivers and Long Island Sound, including City, Traver's, Hart's and Riker's Islands; Brooklyn, consisting of the former city of Brooklyn, and all of King's county; Queens, including the present county of that name; and Richmond, consisting of Staten Island.

The main body of the city, situated on Manhattan Island, is bounded by Spuyten Duyvil creek, and the Harlem river, separating it from the mainland of the State, the East river, New York Bay, and the Hudson river. The island was originally very rough, with a rocky ridge running from the S. extremity, N. and branching into several spurs. These unite at a distance of several miles, culminating in Washington Heights, 230 feet above the water, and in a bold promontory 130 feet high in the extreme N. In the S. the surface consisted of many places of alluvial sand deposits and swamps. The original surface is disappearing by the constant grading and filling in, by the improvement of old, and construction of new streets.

Street Plan.—At the S. end of Manhattan Island is the Battery, a park of 21 acres having a fine water front. Running N. from the Battery is Broadway, the principal business street. At 10th street, Broadway turns N. W., and finally merges into 11th avenue. The streets in the S. part of the city are narrow, crooked and irregularly laid out, but, beginning with 13th street, they become regular, crossing each other at right angles; the cross streets are numbered, as are also most of the avenues running N. and S.

Parks.—The public parks of New York City are very numerous and well kept. The total acreage of parks in 1920 was 7,807, distributed as follows: 1,487 in Manhattan, 3,929 in the Bronx, 1,300 in Brooklyn, 1,175 in Queens, and 63 in Richmond. The larger parks are, Central Park, 840 acres, in Manhattan; Bronx Park, 719 acres, and Van Cortlandt Park, 1,132 acres, in the Bronx, and Prospect Park, in BROOKLYN (*q. v.*). Central Park contains about 30 buildings, including the Metropolitan Museum of Art, and the old United States Arsenal; two extensive reservoirs, numerous lakes, and children's playgrounds. The Bronx Park contains a botanical garden, and a large reservation, used as a zoölogical garden. Van Cortlandt Park is an extensive stretch of rural country, containing a large skating pond, baseball fields, golf links, and a militia parade ground. The numerous other parks, scattered about the city include, City Hall Park, containing the Postoffice and City Hall; Riverside Park, extending several miles along the Hudson river and containing the tomb of General Grant, and Morningside Park, situated on a high ridge E. of Riverside and adjoining the buildings of Columbia University, the new cathedral of St. John the Divine, and St. Luke's Hospital. Parkways connect Van Cortlandt Park with Bronx Park, Pelham Bay Park and Crotona Park. In Brooklyn, Ocean Parkway extends from Prospect Park to Coney Island. The Speedway, a public road for fast driving, 100 feet wide, extends for a distance of two miles along the foot of the bluff on the W. bank of the Harlem river.

Notable Buildings.—Among the public buildings is the City Hall, 216 by 105 feet, and three stories high, a marble edifice in the Italian style, completed in 1812 at a cost of $500,000. In the rear of the City Hall is the Court House and to the east the Municipal Building. The City Prison and Hall of Records are noted for their fine architecture. New York is noted for the number and height of its office buildings. Among the more prominent of these are the Woolworth Building, 792 feet; Metropolitan Life Insurance Building, 700 feet; Singer Building, 612 feet; Municipal Building, 560 feet; Adams Building, American Bank Note Building, American Express Building, American Surety Building, Bankers' Trust Building, Biltmore Hotel, Candler Building, City Investing Building, Columbia Trust Company, Equitable Building, Hanover National Bank Building, Liberty Tower, McAlpin Hotel, Park Row Building, Pulitzer Building, St. Paul Building, Times Building, Western Union Building, Whitehall Building, World's Tower, all over 300 feet high.

New York is also noted for the number and magnificence of its hotels. Among the most prominent are the Ambassador, Astor, Belmont, Biltmore, Brevoort, Chatham, Commodore, Gotham, McAlpin, Majestic, Murray Hill, Nether-

land, Park Avenue, Pennsylvania, Plaza, Prince George, Ritz-Carlton, St. Regis, Savoy, Vanderbilt, Waldorf-Astoria, and many others. There are also many so-called apartment hotels, combining the features of apartment houses and hotels. The Bossert, St. George, and Margaret, in Brooklyn, are also famous. Some of the more important clubs are the Aero, Aldine, Army and Navy, Automobile, Bankers, Calumet, Catholic, City, Colony, Columbia University, Engineers, Harmonie, Harvard, India House, International Sporting, Knickerbocker, Lambs, Lawyers, Lotos, Metropolitan, New York, New York Athletic, New York Yacht, Press, Princeton, Progress, Racquet and Tennis, Railroad, Rocky Mountain, St. Nicholas, Salmagundi, Three Arts, Union, Union League, University, Whitehall, and Yale in Manhattan, and the Crescent Athletic, Hamilton, and Montauk Clubs in Brooklyn.

There are over 100 theaters and music halls in the city, including the Metropolitan Opera House, the Manhattan Opera House, the Carnegie Music Hall, and Madison Square Garden.

Municipal Improvements.—The city is lighted by gas and electricity at a cost of over $3,000,000 per year. The waterworks system, owned by the city, cost $330,175,000, and has a capacity of 955,000,000 gallons per day, and an average consumption of 616,000,000 gallons. There are 3,543 miles of streets, of which 2,226 miles are paved; 2,290 miles of sewers; and 3,003 miles of water mains. The annual cost of cleaning streets and removing garbage averages $6,700,000; of maintaining fire department, $8,640,000; and police, almost $20,000,000. The city government is maintained at a cost of $246,190,000 per annum, and the annual death rate is 12.4 per 1,000.

Churches and Charities.—In 1920 there were over 1,500 churches of all denominations in the boroughs of Manhattan and the Bronx, including Roman Catholic, Protestant Episcopal, Methodist Episcopal, Presbyterian, Baptist, Jewish, Lutheran, Reformed, Congregational, and many other denominations. The Reformed Church is the oldest in the city, and dates from 1628. The Protestant Episcopal is next in age, and Trinity is the oldest and wealthiest parish, maintaining several chapels; St. Paul's, St. John's, Trinity Chapel, St. Chrysostom's, St. Augustine's, St. Agnes, etc. The first Presbyterian Church was founded in 1719 in Wall street, and is now at Fifth avenue and 11th street. The Protestant Episcopal Cathedral on Morningside Heights and the Roman Catholic Cathedral at Fifth avenue and 50th street are among the more prominent churches in the city.

The hospitals in New York are among the finest in the world. In the various boroughs there are about 200 hospitals and dispensaries, prominent among which are Bellevue, Hahnemann, New York Homeopathic, New York Polyclinic, Roosevelt, New York, Presbyterian, and St. Luke's Hospital. There are some 175 asylums and homes, and many benevolent societies.

Education.—The department of education is conducted by a board of 7 members appointed by the mayor. This board has the care and control of all property of the city used for school purposes, and supervises the various executive officers of the department. The Board of Education appoints a City Superintendent for a term of six years. He is the chief executive officer of the board, conducting the business of the department in accordance with its regulations. At the end of the school year 1919-1920 the enrolment in public schools was 908,467; and the number of teachers 21,853. There were about 550 public school buildings and the annual cost of maintaining public schools was over $42,500,000. For higher education there were 25 public high schools, many private secondary schools, the College of the City of New York, the College of St. Francis Xavier, Columbia University, Manhattan College, New York University, Fordham University at Fordham, Normal College of the City of New York, Teachers' College, Brooklyn Polytechnic Institute, Adelphi College, St. Francis College, St. John's College in Brooklyn, Packer Collegiate Institute, Barnard College, Union Theological Seminary, General Theological Seminary, etc. The medical schools are the College of Physicians and Surgeons of Columbia University, Bellevue Hospital Medical College, New York University Medical School, Cornell University Medical School, New York Homeopathic Medical College, New York Medical College for Women, and the Post Graduate Medical School. There are also the New York Dental College and the New York College of Pharmacy. The art schools include the Art Students' League, the Academy of Design, the art school of Cooper Union, and many private schools. There are also numerous schools of music.

Libraries and Periodicals.—The libraries of the city are very extensive. The Astor Library in Lafayette place, the Lenox Library in Fifth avenue, and the Tilden Library were consolidated in 1901, under the title of New York Public Library, Astor, Lenox and Tilden

Foundations. This library stands upon the site of the old reservoir at Fifth avenue and 42d street, and has over 2,500,000 books. Among the many other libraries of importance are the Mercantile, Society, Apprentices', Cooper Union, Columbia University, New York City, New York Historical Society, and the Brooklyn libraries. There are law libraries in the postoffice building, at the Bar Association, at the Equitable Life Insurance Company, the New York Law Institute Library, etc. In 1901 Mr. Andrew Carnegie presented the city with $5,200,000 for the purpose of erecting libraries. This gift is to be used for the erection of 65 branch library buildings in various parts of the city. In 1920 there were about 100 daily newspapers, including morning, evening, and Sunday editions, and many hundred weekly, monthly, and quarterly periodicals of every kind.

Banking.—On Sept. 12, 1919, there were reported 36 National banks, with $133,700,000 capital; many State banks; over 50 savings banks, with over $1,500,000,000 in savings deposits; numerous safe deposit companies and trust companies. The exchanges at the United States clearing house in New York City, during the year ending Sept. 30, 1920, aggregated $252,338,249,000; an increase over those of the preceding year of $37,634,000,000. There is a Federal Reserve Bank with 47 members.

Commerce.—The imports of merchandise at the port of New York, during the year ending June, 1920, aggregated in value $2,904,648,933; exports, $3,383,638,588. Over one-half the import, and almost one-half the export trade of the United States, is carried on through this port. New York has steamship communications with the entire civilized world, with over 100 steamship lines. The city is connected with the W. of the United States by several trunk line railroads, including the Erie, Lackawanna, Pennsylvania, Baltimore and Ohio, and New York Central; and with the Great Lakes district by the Hudson river and Erie canal for eight months of the year. About three-fourths of the immigrants entering the United States land at New York, the immigrant station at Ellis Island having accommodations for 10,000 per day. There are numerous exchanges in the city, the largest being the Produce Exchange, the largest in the world. It was organized in 1861 and has a limited membership of 3,000. Other exchanges are the Stock Exchange, Maritime Exchange, Consolidated, Cotton, Metal and Mercantile Exchanges. The New York Chamber of Commerce, chartered in 1770, is the oldest commercial corporation in the country and has a membership of about 800.

Transportation.—New York City has upward of 100 street railway lines equipped with electricity. The elevated railways in Manhattan and the Bronx are united under one management, the Manhattan Railway Company, controlled by the Interborough Rapid Transit Company, with four lines running N. and S. There are several elevated lines in Brooklyn, all under the Brooklyn Heights Railroad Company. Four of these begin at the bridge. In recent years the subway system, in Manhattan and Bronx as well as in Brooklyn, has been greatly extended, and in 1920 the Interborough Subway lines alone carried over 586,000,000 passengers. The subway system was built partly with public funds and is operated by the Interborough and the Brooklyn Rapid Transit companies. In spite of its tremendous expansion it is still insufficient for the needs of the city, and partly as a result of war conditions its financial condition in recent years has been insecure and unsatisfactory. The Brooklyn Rapid Transit Co. went into the hands of a receiver in 1918, and the majority of the surface lines in Manhattan, all those operated by the New York Railways Company, met a like fate.

There are over 600 miles of subway and "L" tracks in the city, of which 361 miles are Interborough lines, and 258 are Brooklyn Rapid Transit lines. The Interborough subway roads total 222 miles; the Manhattan "L" system, 139 miles. The Interborough subway roads have cost over $300,000,000; the Brooklyn Rapid Transit subway roads over $193,000,000. The Interborough's share of the cost has been over $148,000,000, including $48,000,000 the company spent on the first East river tubes and the extension to Flatbush and Atlantic avenues, Brooklyn. The city has put up the rest of the cost of the Interborough subways. Of the cost of the Brooklyn Rapid Transit subways the company has borne over $69,000,000; the city, over $124,000,000. Under the dual system of rapid transit all of the lines operated by the Interborough and the Consolidated Railroad Co. (the latter a Brooklyn Rapid Transit subsidiary), including the first subway and the elevated lines of the two systems are combined in two great operating units covering four of the five boroughs. Each company has lines which operate through the so-called community center of the city, namely the section of Manhattan Island below 59th street. New York's original subway, operated by the Interborough, now denoted the First Subway, is an integral part of the dual system. But under the operat-

ing conditions scheduled for the new lines it will lose its identity and be merged for operating purposes with other lines assigned under the dual agreements to the Interborough. The dual system was created when the city, through the Public Service Commission, on March 19, 1913, entered into an agreement (the dual contracts) with the Interborough and the Municipal Railway Corporation (the latter a Brooklyn Rapid Transit subsidiary), providing for the construction and operation of new lines and extensions.

Electric cars connect with all the suburbs and many places on Long Island, Westchester county, and western Connecticut. There are ferry lines connecting with Brooklyn, Jersey City, Weehawken, Staten Island, Hoboken, Long Island City, and other cities and islands about the city. There are steamship lines connecting with over 140 points on the Hudson river, the Atlantic coast, Long Island, and the bay. Manhattan is united with Brooklyn by the Brooklyn, Manhattan, and Williamsburg bridges, and with Queens by the Queensboro Bridge. There is also the Hell Gate Bridge, connecting the Pennsylvania and New York, New Haven and Hudson River railroad systems. Both the Hudson and the East rivers have been tunneled, the former in connection with the Pennsylvania Railroad terminal and the Hudson and Manhattan railroad system, and the latter in connection with the Long Island Railroad and the subways to Brooklyn and Long Island City. A new tunnel for vehicular traffic between Manhattan and New Jersey is to be built.

Manufactures. — The manufacturing interests of New York City are extensive and varied, and are nearly as important as her commerce. According to the last census of manufactures (1914), New York City was the leading manufacturing center of the United States, both in respect to the number of establishments and to the value of the products. There were in 1914 almost 30,000 establishments, with an average number of wage earners exceeding 550,000 and a value of products exceeding $2,250,000,000. The most important industries were the manufacture of clothing, printing and publishing, meat packing, the manufacture of foundry and machine shop products, tobacco, cigars, and cigarettes, millinery and lace goods, fur goods, shirts, furniture, men's furnishing goods, electrical apparatus and supplies, pianos, etc.

Finance.—On Jan. 1, 1920, the total funded gross debt of New York City was $1,238,260,597. There was $204,382,238 in the sinking fund, leaving a net funded debt of $1,033,878,359. The interest on the city debt amounted to almost $50,000,000. The assessed valuation of property for the entire city was $8,428,322,753 for real estate property and $362,412,780 for personal property. The Borough of Manhattan led with an assessment of over $5,000,000,000 for real estate and almost $300,000,000 for personal property; Brooklyn, with over $1,850,000,000 for real estate and almost $45,000,000 for personal property, being in the second place.

Government.—The first charter of Greater New York went into effect Jan. 1, 1898, but has been amended at various times since then. The present charter of the city in its main features is that of 1901, which went into effect Jan. 1, 1902. Under this charter the city is governed by a mayor, elected every four years, a comptroller, also elected every four years, and a Board of Aldermen consisting of 67 members, elected every two years. At the head of the latter body is the President of the Board of Aldermen, elected every four years. For purposes of local administration the city is divided into five boroughs, each of which having a president, elected every four years. The executive power of the city is vested in the mayor, the presidents of the boroughs, and the officers of the departments, which latter are appointed by the mayor, with the exception of the head of the department of finance, and the comptroller, an elective office. The mayor has also the power of appointment of the Board of City Magistrates. The legislative power of the city is vested in the Board of Aldermen. The mayor has the power of veto for all ordinances and resolutions of the Board of Aldermen. There are departments of Public Markets; Plants and Structures; Fire; Police; Tenement Houses; Law; Taxes and Assessments; Health; Water Supply, Gas and Electricity; Correction; Docks and Ferries; Parks; Licenses; Street Cleaning; and Public Charity. Each of these is headed by a commissioner, appointed by the mayor. There are also various boards, the most important of which are the Board of Education; the Board of Estimate and Apportionment; the Board of City Record; the Board of Elections; etc.

History.—In 1609 the Island of Manhattan was first visited by Hendrik Hudson, who ascended the river which bears his name. In 1613 Adrian Block, a merchant, arrived and built four houses. In 1623 a Dutch colony was established and in 1626, Peter Minuit, the governor, bought Manhattan Island from the Indians for $24 in trinkets. This colony was known as New Amsterdam, and

passed into the possession of the English in 1664, and was named New York. In 1673 the town surrendered to a Dutch squadron, but was given back a year later by treaty. Sir Edmund Andros, the first English governor was overthrown in 1689, and Leisler, the leader of the progressive party usurped the government until 1691, when he was hanged for treason. There were uprisings of slaves in 1712 and 1741, but these were suppressed by cruelty. In 1765 the Stamp Act Congress met in New York City, and voted a Declaration of Rights. In 1774 a cargo of tea was sent back to England and another thrown overboard, and on April 3, 1775, the colonial assembly adjourned. The city was held by the Continental militia till Aug. 26, 1776, when forced to withdraw by the British who held the city till Nov. 25, 1783. Washington was inaugurated the first time in New York City, April 30, 1789. In 1805, the first free school was opened; in 1807 the first steamboat voyage to Albany was made, and in 1825 the Erie canal was opened. The city was visited by a cholera epidemic in 1832, and again in 1834, 1849, and 1854; by a disastrous fire in 1835; and a financial panic in 1837, the bread riots occurring in that year. In 1853 the Crystal Palace Industrial Exhibition took place, and in 1863 occurred the draft riot caused by the enforcement of the military draft. The city supplied the Union army with 116,382 troops for the Civil War. The Brooklyn Bridge was opened in 1883; and the Bartholdi Statue unveiled in 1886. The celebration of the centennial of Washington's inauguration took place in 1889; and the Columbian celebration in 1892 and 1893. In 1897 a new charter was adopted consolidating New York, Brooklyn, Queens county, Staten Island, and the Bronx, as the city of Greater New York. This charter went into effect Jan. 1, 1898, and was amended by the legislature in 1901, and, in respect to certain portions, at various other times.

NEW YORK, COLLEGE OF THE CITY OF, a college maintained by the city of New York in exactly the same manner as the various State colleges are supported by the States. The State Legislature granted to the Board of Education of New York City power to establish the college in 1847, although it was called at that time the Free Academy, and was not granted the power to confer collegiate degrees until 1854. The institution is situated on 137th Street on Washington Heights. The present buildings were erected in 1907, and together constitute one of the finest groups of public buildings to be found in the city. In 1911 Mr. Adolph Lewisohn gave the college a large stadium, which is used for athletic purposes and also for large public celebrations. Outside of this benefaction the college buildings were entirely paid for by the taxpayers of New York City.

The institution has no professional schools and no graduate department, but simply the arts and science course. In this it is in marked contrast to the State University. Two degrees are granted, each in accordance with the type of course chosen by the student, either Bachelor of Arts or Bachelor of Science. The college also maintains a preparatory school, and night schools for teachers and others who cannot attend regular college classes. In 1919 students numbered 10,763, and faculty 270. In December, 1914, Dr. Sidney E. Mezes, President of the University of Texas, was made President of the college.

NEW YORK PUBLIC LIBRARY, a library formed by the consolidation in 1895 of the Astor Library, the Lenox Library, and the Tilden Trust. The Astor Library was incorporated in 1849 by John Jacob Astor, who bequeathed $400,000 to establish a Free Public Library. Other gifts at various times increased the endowment of the library to about $1,000,000 at the time of the consolidation. The Lenox Library was incorporated in 1870. It was composed chiefly of the library of James Lenox, which had an endowment of about $500,000. The Tilden Trust was incorporated in 1887 and was comprised of the private library of Samuel Jones Tilden, who left to it the bulk of his estate amounting to about $2,000,000. The new building was erected at the corner of 5th Avenue and 42d Street, and was begun in 1902 and completed in 1911. It is the second largest library in the United States, Congressional Library being the first, Boston the third. In 1900 the New York Free Circulating Library was consolidated with the New York Public Library and a number of smaller libraries were united with the New York Public Library. In 1901 Andrew Carnegie made available about $5,000,000 for the construction of branch libraries throughout the city. The library contained in 1920 2,639,129 bound volumes. Branches are maintained in all parts of the city.

NEW YORK UNIVERSITY, a coeducational non-sectarian institution in New York City; founded in 1831; reported at the close of 1919: Professors and instructors, 518; students, 9,765; volumes in the library, 142,000; productive funds,

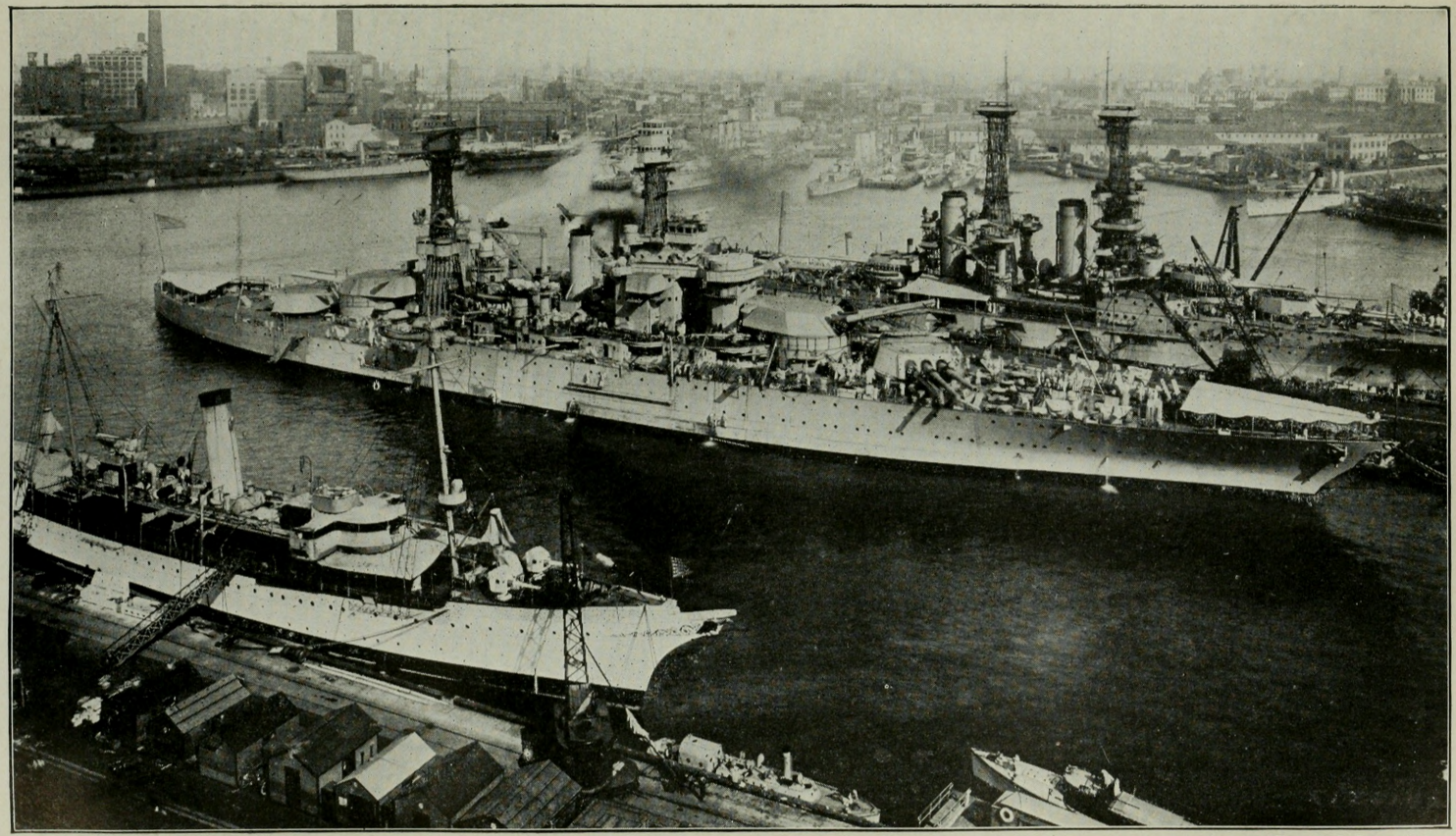
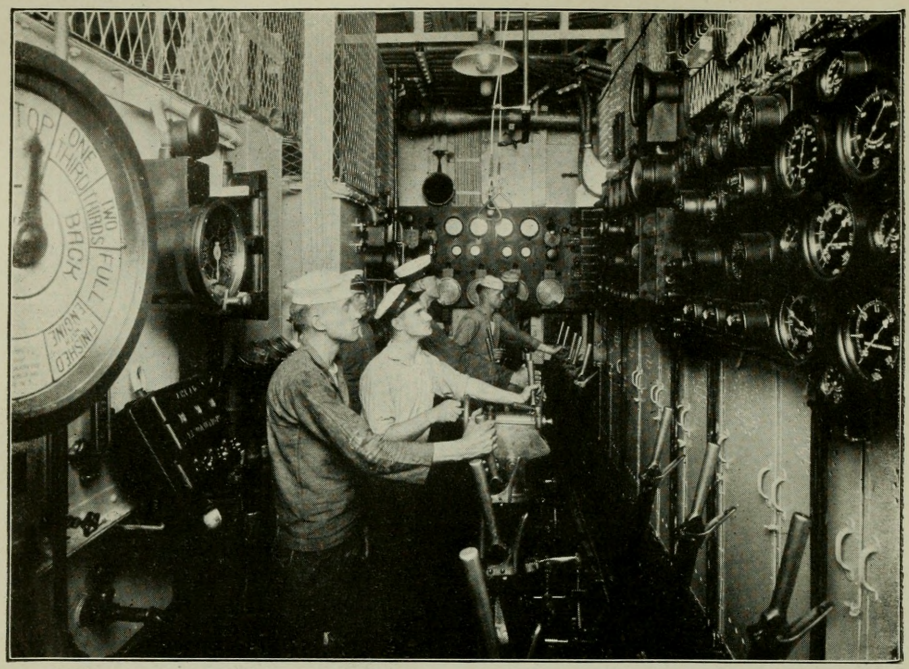


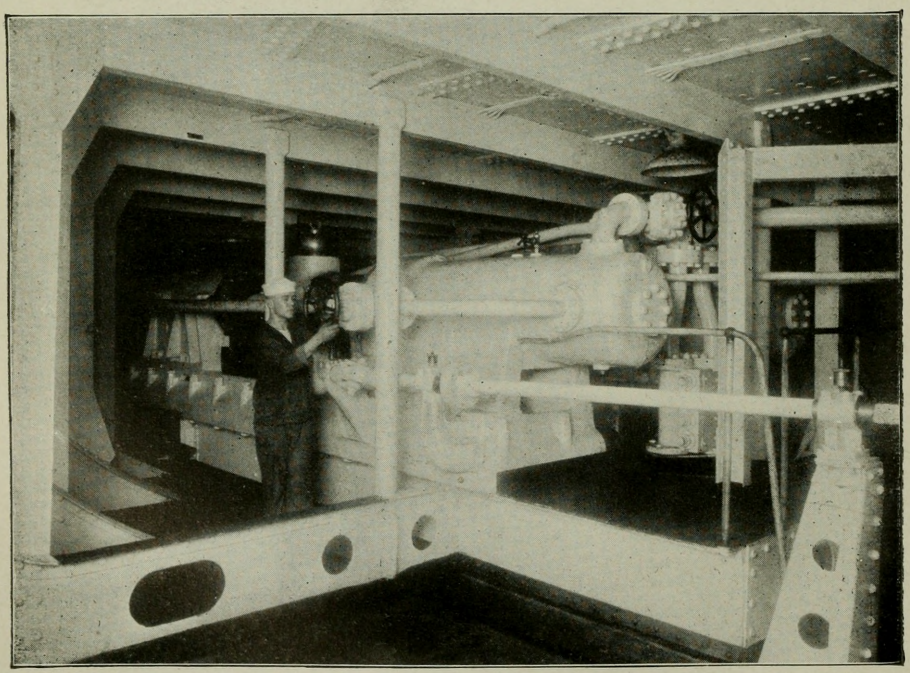
Photo by Ewing Galloway

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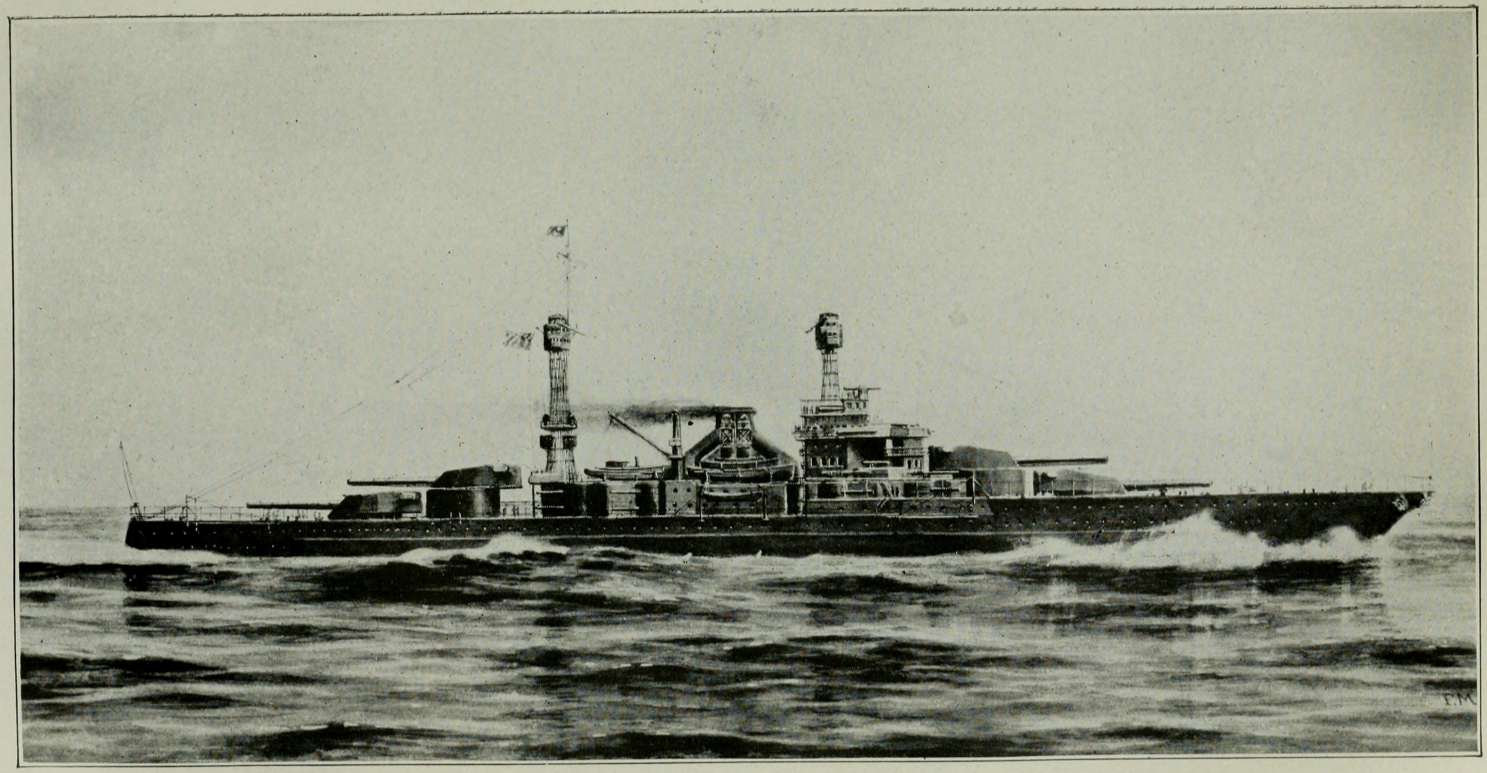
THE ELECTRICALLY DRIVEN U. S. SUPERDREADNOUGHT "TENNESSEE" AT THE BROOKLYN NAVY YARD



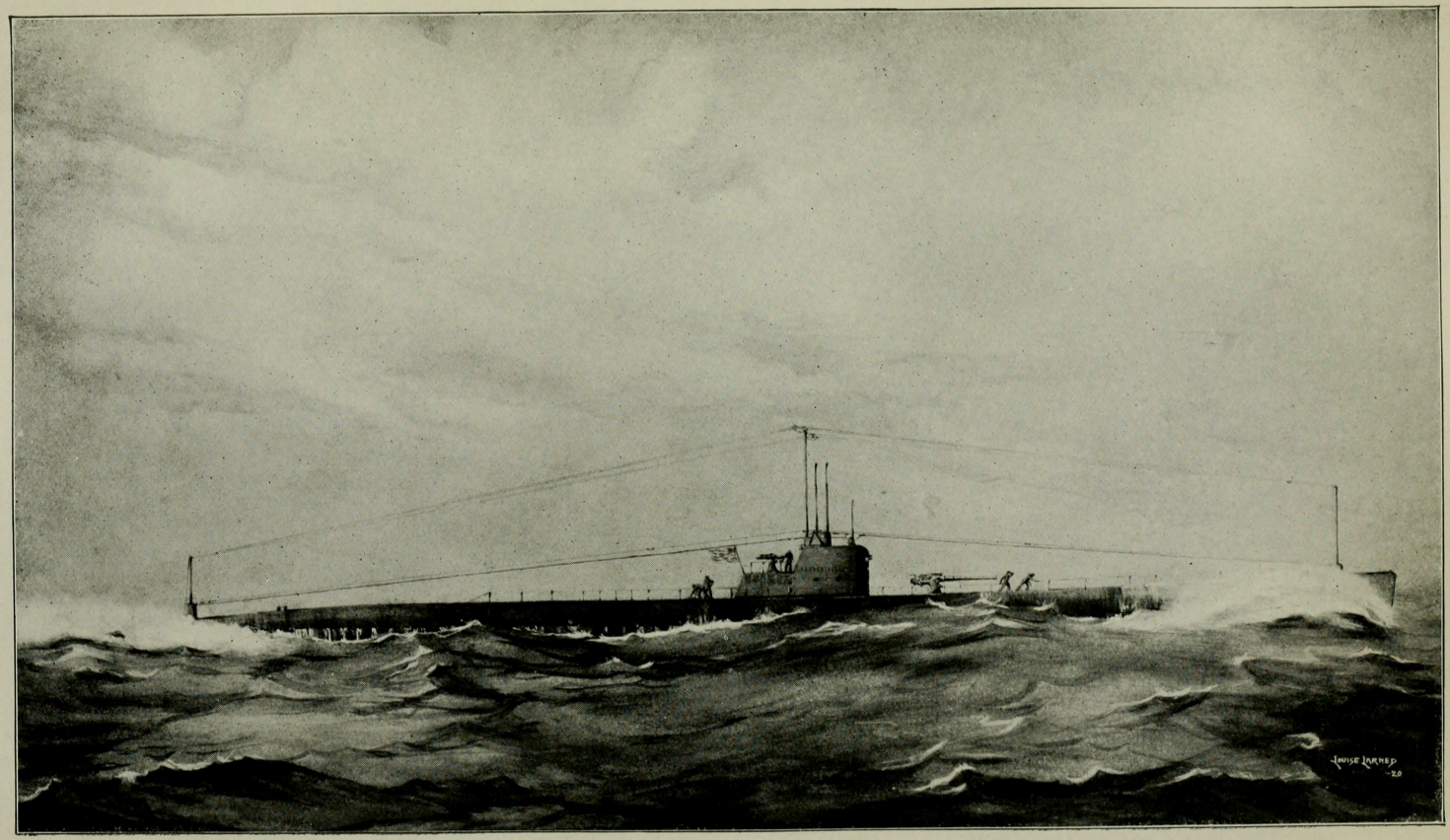
ELECTRICAL EQUIPMENT IN THE GENERAL CONTROL ROOM OF THE "TENNESSEE"



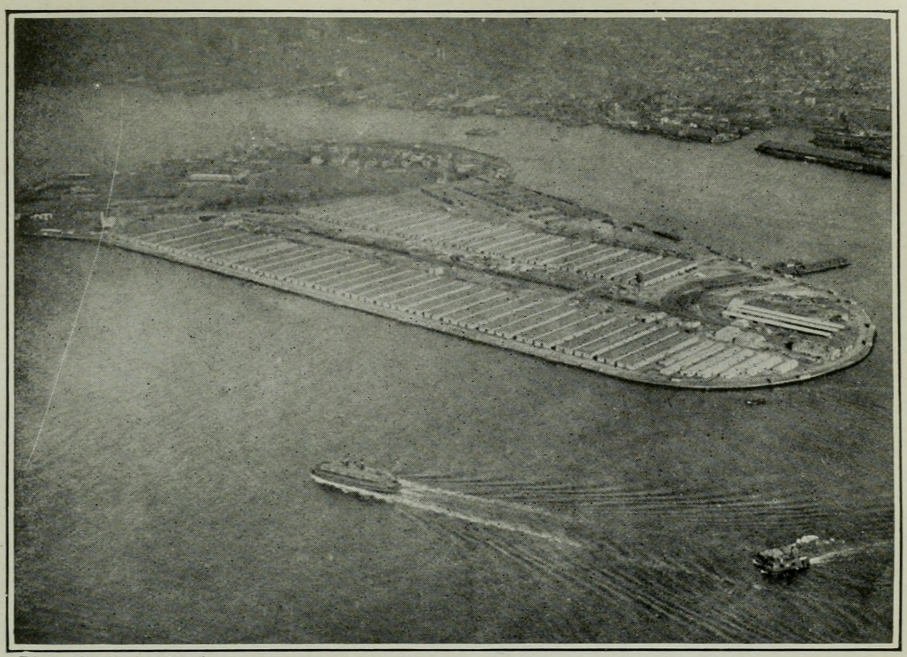
THE HYDRAULIC CYLINDERS THAT TURN THE RUDDERS OF THE "TENNESSEE"



U. S. BATTLESHIP, "NORTH CAROLINA" CLASS

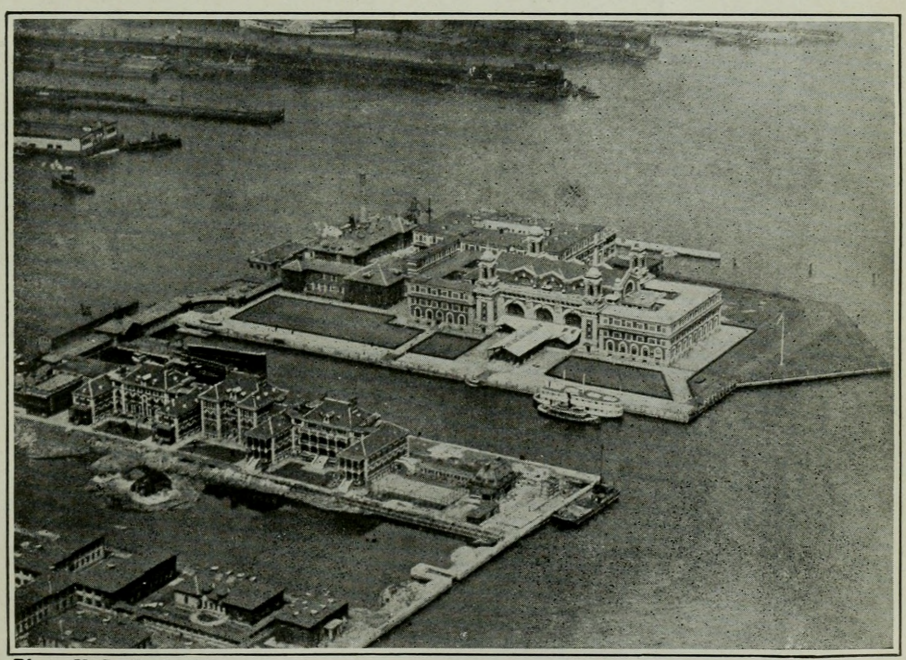


U. S. FLEET SUBMARINE



Photo, U. S. Air Service

A VIEW OF GOVERNOR'S ISLAND, HARBOR OF NEW YORK



Photo, U. S. Air Service

THE IMMIGRATION STATION ON ELLIS ISLAND, NEW YORK



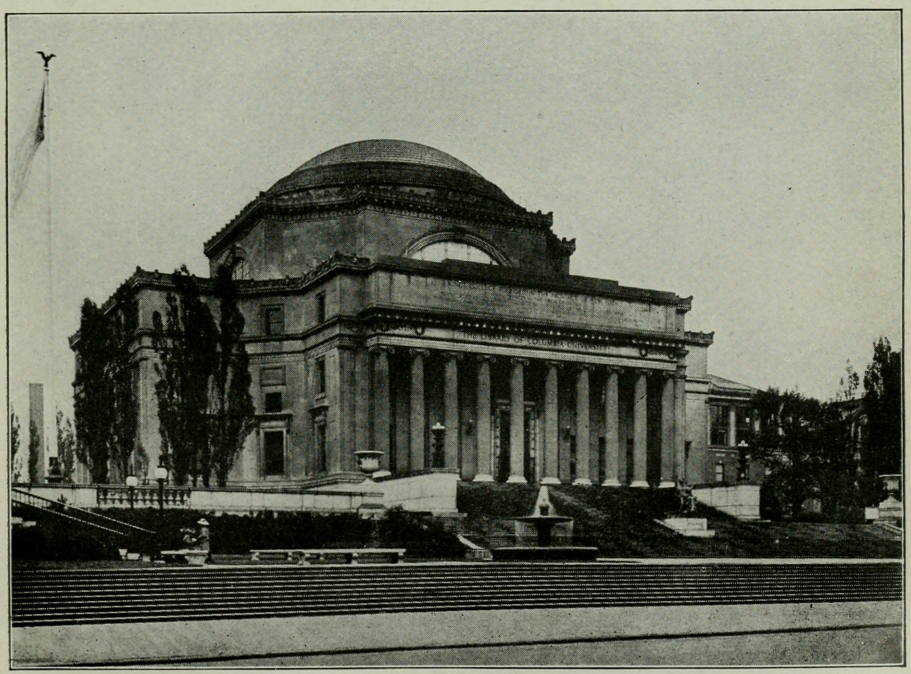
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THE STOCK EXCHANGE, WALL STREET, NEW YORK



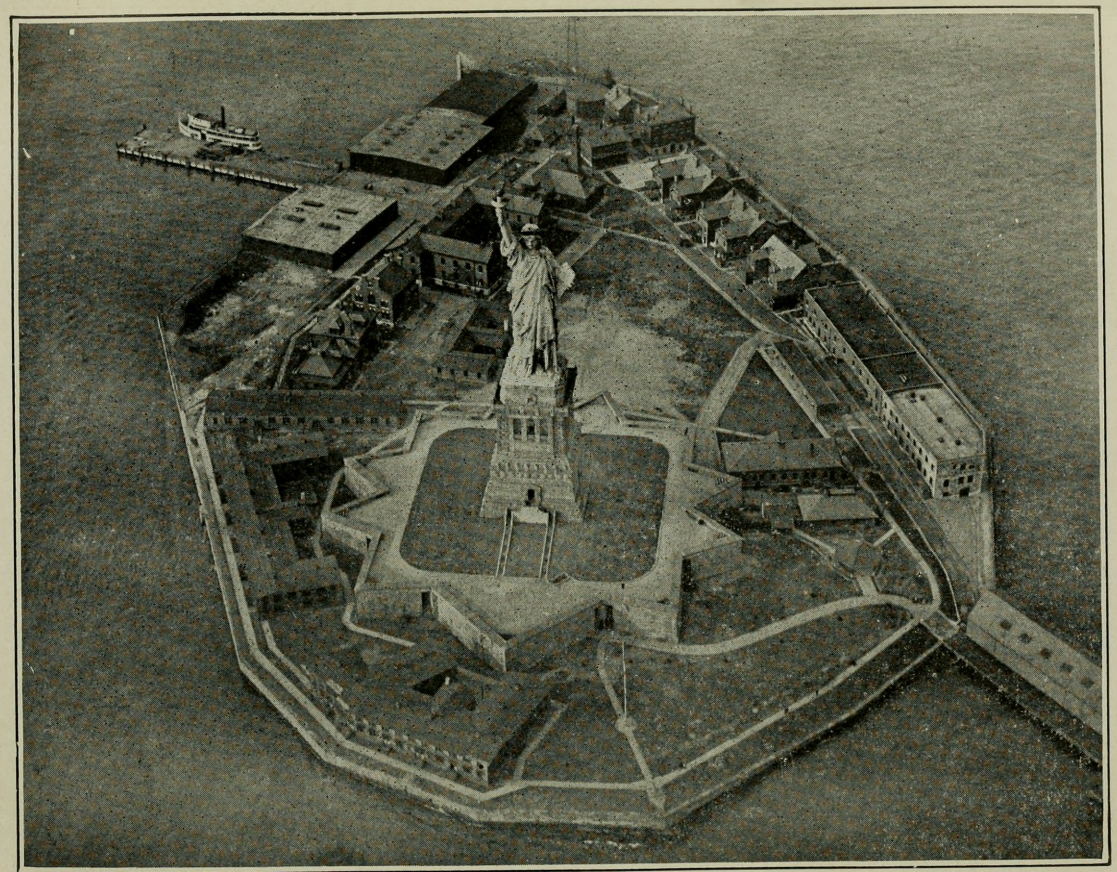
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THE COLLEGE OF THE CITY OF NEW YORK, LOOKING THROUGH THE GATE FROM AMSTERDAM AVENUE



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THE LIBRARY, COLUMBIA UNIVERSITY, FACING 116TH STREET, NEW YORK



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AN AVIATOR'S PHOTOGRAPH OF THE STATUE OF LIBERTY AND BEDLOE'S ISLAND, HARBOR OF NEW YORK



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$1,200,000; income, $762,192; number of graduates, 26,154; president, Elmer Ellsworth Brown, LL. D.

NEW ZEALAND, a dominion of the British empire, consisting of a group of islands in the South Pacific Ocean, two large islands, called North and South (or Middle) Islands, and a third of comparatively insignificant size, Stewart Island; length of the group, N. to S., about 1,000 miles; area, 104,471 square miles. Pop. (1918) estimated 1,106,677, besides about 45,000 Maoris. Capital, Wellington, in North Island; other chief cities: Dunedin, Auckland, Christchurch.

North Island, the N. one of the group, and separated from South Island by Cook's Strait, which, where narrowest, is about 23 miles wide, is very irregular in shape, and much broken by deep bays and projecting headlands. Its area is estimated at 44,468 square miles. The main body of the island, as well as its peninsulas, has for the most part an exceedingly rugged and mountainous surface; and besides being traversed from S. to N. by chains of mountains reaching a height of 6,000 feet, presents a number of lofty isolated volcanic peaks, among which the most conspicuous are Tongariro (6,500 feet) occasionally active, and Ruapehu (9,195 feet), and Mount Egmont (8,300 feet), extinct volcanoes. The coast line of North Island contains many excellent natural harbors, especially those of Wellington on Cook's Strait, and of Auckland on the Isthmus of the N. projection. The chief indentations are Hauraki Gulf and Bay of Plenty in the N. E.; Hawke's Bay in the E.; South Taranaki Bight in the S. W. The streams are extremely numerous, but are mostly mere torrents, which bring down immense deposits of shingle. The largest of the rivers are the Waikato (200 miles) and the Wanganui (about 120). Most of the streams have their sources in lakes embosomed among mountains covered with magnificent forests. The largest of all the lakes is Taupo, situated near the center of the island, about 36 miles long by 25 miles broad. To the N. E. occur a number of lakes, familiarly known as the "Hot Lakes," there being here hot springs and other volcanic phenomena.

South Island is of a much more compact and regular form; area, about 58,525 square miles. With exception of the N. coast, the S. W. coast, and a remarkable spur on the E. coast called Bank's Peninsula, the coast line is very continuous. On the N. coast, from Cape Farewell to Cape Campbell, are numerous good harbors; in the S. W. are a series of narrow fiords. South Island is traversed from N. to S. by a lofty central mountain chain, which has an average height of about 8,000 feet; while Mount Cook, near the W. coast, the culminating point of New Zealand, is 13,200 feet high. Among these mountains are glaciers of great size, stretching down on the S. W. almost to the sea. Along the E. coast several extensive plains exist. The largest river is the Clutha, which has a course of 150 miles, and enters the sea near the S. E. angle of the island. The largest lakes are Wakatipu and Te Anau, covering 114 and 132 square miles respectively.

Stewart Island is separated from South Island by Foveaux Strait, about 15 miles wide. It has an area of 665 square miles. A great number of smaller islands belong to the New Zealand group. The Chatham Islands and Kermadec Islands are outlying dependencies.

Minerals and Natural Productions.— New Zealand is rich in minerals. Coal is abundant; iron, tin, silver, and copper are also found in various regions. Gold, discovered in 1861, is worked both in North and South Islands. The output in 1917 was valued at £165,299. The climate is very varied, though remarkably healthful. In temperature it resembles France and north Italy, but the humidity is considerably greater. Rapid changes are a notable feature of the weather. Among vegetable productions the most characteristic are the ferns (130 different species), which form almost the only vegetation over immense districts. Some of them are more than 30 feet high, and remarkable for the elegance of their forms. The flax plant furnishes an article of export. A number of the forest trees furnish valuable timber. Among others is the kauri or damar pine. Flowering plants are remarkably scarce, and there are no indigenous fruits. The colony produces every English grain, grass, fruit, and vegetable. In animals New Zealand is singularly deficient, only a sort of dog (now extinct), a rat, and two species of bats being indigenous. Rabbits have been introduced and have multiplied so as to become a perfect pest; pigs now run wild, as well as cats. Pheasants, partridges, quails, and red and fallow deer have also been successfully introduced. All the common European quadrupeds appear to be easily acclimatized. Pigeons and parrots are the most common native birds. Among others are the apteryx (a wingless bird), the huia or parson-bird, and the owl parrot. The gigantic moa is now extinct. The chief

reptiles are a few lizards. The coast teems with fish, and seals are still numerous in some parts. The original natives of New Zealand, a people of Polynesian origin, are called Maoris. Their numbers have been so reduced by internecine feuds that they do not now exceed 40,000, all of whom, with the exception of a few hundreds, are located in the North Island. By missionary efforts a great part of them have been converted to Christianity. They have acquired in many instances considerable property in stock, cultivated lands, etc., and in the neighborhood of the settlements they are adopting European dress and habits.

Government and Education.—By the constitution the crown appoints the governor; but the legislative power is vested in the General Assembly, or Parliament of two houses—a Legislative Council consisting of 43 members nominated by the crown for life; and a House of Representatives, which is made up of 80 members, elected by the people for three years. Women have the right of suffrage. The governor is aided and advised by a ministry comprising the chief officers of state, who are members of the General Assembly. By the act passed by the assembly in 1875, which abolished the provincial system, the powers previously exercised by superintendents and provincial officers were delegated to county councils or vested in the governor. The civil and criminal laws are the same as those of England. For colonial defense a number of volunteers have been enrolled (about 8,500); the chief ports are also being put in a state of defense. There is no State-aided Church, but most Christian sects are well provided for. The Church of England is most numerously represented. Elementary education is free, secular, and compulsory. Secondary education is provided for in numerous high schools, grammar schools, colleges, etc. At the head of the higher education is the University of New Zealand, an examining body empowered to grant honors, degrees, and scholarships. Affiliated to it are several colleges throughout the colony. There is also a separate university at Dunedin. There are training colleges for teachers, theological colleges, etc.

Industry and Commerce.—Stock-rearing and agriculture are the most important industries, though mining is also an important occupation. There are about 30,000,000 sheep in the colony, and by far the most important export is wool ($60,000,000 annually).

In 1917 the area planted with crops was 16,906,672 acres. There were raised in 1918, 6,761,000 bushels of wheat, 4,785,000 bushels of oats, 572,000 bushels of barley. During the progress of the World War New Zealand was prosperous industrially. The foreign trade in 1918 amounted to $256,500,761. The imports were $117,934,488 and the exports $138,566,273. The chief articles of export were wool, meat, cheese, an butter. In 1917, 543 vessels with a tonnage of 1,405,766 entered the ports of the dominion.

Labor Legislation.—New Zealand was a pioneer state in exacting measures tending toward state socialism—e. g., income and unimproved land tax, 1891; subdivision of pastoral estates, 1893; compulsory conciliation and arbitration, 1894; old-age pensions, 1898. Widows, war veterans, and phthisical miners are also pensioned.

History.—New Zealand was discovered by Tasman in 1642, but little was known of it till the visits of Cook in 1769 and 1774. The first permanent settlement was made by missionaries in 1815. In 1833, a resident was appointed, with limited powers, and subordinate to the government of New South Wales. In 1840 New Zealand was erected into a colony; in 1841 it was formally separated from New South Wales and placed under its own independent governor; and in 1852 it received a constitution and responsible government. In 1865 the seat of government was removed from Auckland to Wellington. In 1873 the public works policy was inaugurated, and large loans were raised for immigration, harbors, railways, roads, etc. In 1876 the provinces were abolished; the colony was divided into 63 counties, and all government centralized at Wellington.

New Zealand furnished over 100,000 men in the World War. Of these nearly 15,000 were killed. The total casualties were over 52,000. New Zealand troops distinguished themselves wherever they were engaged and took an especially prominent part in the operations in the Dardanelles, where, with the Australian troops, they were called Anzacs. Conscription was introduced in 1916.

NEY, MICHEL, DUKE OF ELCHINGEN AND PRINCE OF THE MOSKVA, peer and Marshal of France; born in Saarlouis, France, Jan. 10, 1769. His early years were devoted to the study of the law, but disliking the confinement, he entered the army as a private hussar in 1787. He distinguished himself in the first years of the Revolutionary War, when serving with the army of the Rhine; and in 1796 he rose

to the rank of Brigadier-General. On his marriage with Mlle. Anguié, the friend of Hortense de Beauharnais, Napoleon named him his envoy and minister-plenipotentiary to the Helvetian republic; but in 1803 he was recalled to take command of the army intended to make a descent upon England. In the following year, Ney was created a marshal. After a succession of victories he obtained the additional title of Prince of the Moskva, and in June, 1814, he was invested with the dignity of a peer of France. He retired to his seat in the country, from which he was recalled in March, 1815, by information that Napoleon had quitted Elba. On taking leave of Louis XVIII., he made many protestations of his zeal and fidelity to the king. Arriving at Besançon, Ney, however, found the whole country hastening to meet the returning emperor at Lyons. The troops he commanded shared the delirium; and Ney himself yielded his opinion, and went over with his army to his former friend and master. He again fought under his banner at the battle of Waterloo. After the conclusion of that eventful day, and the second abdication of Napoleon, Ney was advised to quit France. He refused and retired to the residence of a near relative; but he was soon arrested, and brought to trial; and his colleagues and companions in arms having declared themselves incompetent to form a court-martial whereby to judge him, the affair was carried to the House of Peers, by whom he was condemned. He was shot Dec. 7, 1815, in the garden of the Luxembourg, Paris.

NEZ PERCÉS, a tribe of American Indians, chiefly settled in Idaho, on the Lapwai river. The Nez Percés proper have always been loyal to the whites, and are making good progress in civilization; but in 1877 the treaty reductions of their reservation led to a sanguinary outbreak on the part of the "non-treaty" Nez Percés, who murdered settlers, fought the soldiers, and then fled across Idaho, Montana, and Dakota. They were overtaken by General, then Colonel, Miles, and beaten, and the survivors (some 350) transferred to Indian Territory; but in 1885 some were restored to Idaho, and the rest joined the Colville Indians, in Washington. There is no evidence that they ever had a custom which would justify their name, "pierced nose." At present their number has been reduced to some 1,000.

NGANKINGFU or **NGANKING**, a city of China on the Yang-tze river. It has a military college and other public buildings. Pop. about 40,000.

NIAGARA FALLS. The Niagara river, which flows from Lake Erie N. into Lake Ontario, is about 36 miles in length; its descent from the level of one lake to that of the other is about 334 feet. At the foot of Grand Island, which reaches within 1½ miles of the Falls, the river is contracted to a width of 2½ miles, and grows narrower as it proceeds. By this, and by the descent in the channel, which is about 60 feet in the mile, are produced the swift currents known as the rapids, in which the river, notwithstanding its great depth, is perpetually white with foam. At the Falls, which are 22 miles from Lake Erie, the river is divided by an island called Goat Island; but, in consequence of a bend in the channel, by far the largest portion of the water is sent down by the Canadian side. On this side, therefore, is the grander cataract, which has been named the Horseshoe Fall and which is about 600 yards in width and 154 feet high. The water is so deep that it retains its green color for some distance below the brow of the precipice; and it rushes over with such force that it is thrown about 50 feet from the foot of the cliff. The separation caused by Goat Island leaves a large wall of rock between the Canadian and American falls, the latter being again divided by an islet at a short distance from Goat Island. This fall is from 8 to 10 feet higher than the Horseshoe, but only about 220 yards wider. The Falls can be seen from below on both sides, and every facility is given for viewing them from all the best points. The river is crossed by a suspension bridge, and by a ferry about 200 or 300 yards below the Falls, where it is 1,200 yards wide. A stratum of a rock runs across the direct course of the river, 3 or 4 miles below, which, after forming a vast circular basin, with an almost impassable whirlpool, is forced away at right angles to its old channel.

The total energy of the Falls is calculated at 16,000,000 horse power, and the work of utilizing this power was begun on April 15, 1895, when the first large dynamo was run at full speed. On July 1 the first electric power transmitted for commercial purposes, 4,000 horse power, was sent to an aluminum factory a mile distant. On Jan. 17, 1896, the Niagara Falls Power Company accepted a grant for the transmission of electric power for lighting and power purposes to Buffalo. On April 18, 1898, the fourth 5,000-horse-power Westinghouse generator had been tested by the power company. This machine, the first of a new set of dynamos to be installed

and operated, brought the capacity of the station up to 20,000 electrical horse power; additional dynamos subsequently raised the capacity to 300,000 horse power. It is used in Syracuse, 165 miles from the source, and supplies power to the electric railways of Ontario, 240 miles away.

NIAGARA FALLS, a city in Niagara co., N. Y.; on the Niagara river, and on the Michigan Central, the Erie, the Lehigh Valley, the Grand Trunk, the New York Central and Hudson River and other railroads; 20 miles N. of Buffalo. Here are De Veaux College (P. E.), Niagara University (R. C.), a business college, several hospitals, excellent schools, Carnegie library, electric lights, electric street railroads, several National and State banks, and a number of daily and weekly newspapers. It contains flour and paper mills, a bicycle factory, planing mills, carbide and carborundum works, electrochemical and electrometallurgical works and several engineering plants operated by the power of the falls for manufacturing. The city has in recent years increased greatly in industrial importance. The income of its trade is about $50,000,000 per year. The city has a continual flow of visitors who are attracted thither by the Niagara Falls, and Whirlpool Rapids, about two miles below the falls. Niagara Falls was chartered in 1892 from the former villages of Niagara Falls and Suspension Bridge. Pop. (1910) 30,445; (1920) 50,760.

NIAS, an island belonging to the Netherlands; about 65 miles W. of Sumatra; has an area of about 1,800 square miles. The surface is mountainous, the highest peak rising 1,970 feet. In 1857, when the Dutch took complete possession of the island, the population was reckoned at 17,000. Recent estimates place it at 200,000. They grow rice, cocoanuts, bananas, tobacco, sugarcane, etc., and annually about 110,000 pounds of pepper. The Niassers are of the Malay race, but fairer than the type.

NIBELUNGENLIED, a German epic, the name of which signifies "Song of the Nibelungs," composed by some anonymous poet near the close of the 12th century. The Nibelungs, in German legend, were a race of N. dwarfs, so styled from their king, Nibelung. Later, the same was applied to the followers of Siegfried, the principal hero of the first part of the "Lied," who, with his followers, conquered from the Nibelungs in Norway a "hoard" or treasure collected by them.

NIBLACK, ALBERT PARKER, an American naval officer; born in Vincennes, Ind., July 25, 1859; was graduated from the United States Naval Academy in 1880. He was naval attaché at Berlin, Rome, Vienna, Buenos Aires; served in the Spanish-American War, Filipino Insurrection, Boxer Campaign, occupation of Vera Cruz in 1914, and commanded squadron 1, Atlantic Fleet, battleship force, and later United States naval forces based on Gibraltar. Promoted Rear Admiral August, 1917.

NICARAGUA, a republic of Central America; reaching from the Caribbean Sea to the Pacific, between Costa Rica on the S. and Honduras on the N., the E. (Caribbean) coast measuring 290 miles and the W. coast 185 miles; area, 49,200 square miles; pop. about 420,000, including 40,000 uncivilized Indians.

Topography.—The Central American Cordilleras form the backbone of the country; they run N. W. and S. E. at a distance of 12 to 30 miles from the Pacific, and attain elevations of 4,000 and 5,000 feet above sea-level. On the W. the surface sinks rapidly to a longitudinal depression (110 feet), the S. two-thirds of which are filled by the large lakes of Nicaragua (115 miles long, 45 broad, and 140 feet deep in most parts) and Managua (35 miles long, 20 broad, 30 feet deep), the latter lying N. of the former and 25 feet higher. This depression is studded with a chain of volcanic cones, standing on islands in the lakes (Ometepec and Madera, 4,190 feet), and clustering thickly between the N. end of Lake Managua and the Gulf of Fonseca at the N. W. extremity of the country, as Coseguina (3,835 feet, which was the scene of a tremendous outbreak, lasting over four days, in 1835), Viejo (6,267), Telica (4,200), Momotombo (6,890), Mombacho (4,600), and several others. Though most of these are quiescent, some of them burst forth in eruption from time to time; Ometepec poured out its lavas during seven days in 1883. Another low range separates this depression from the Pacific. The districts W. of the central backbone are the chief seats of the population. There stand the towns Managua (the capital), Leon, Granada, Chinandega, Rivas. On the W. coast there are three harbors—the Gulf of Fonseca in the N., Salinas Bay in the S., and the port of Corinto toward the N. The only port on the E. side is Greytown, at the mouth of the San Juan river. E. of the Cordilleras the surface falls away gradually; the spurs that break off from the main ridge sink into the low alluvial plains that face

the Caribbean Sea. Thick forests clothe extensive areas on this side. Several rivers carry off the surplus water E., a few being of good length, such as the Coco or Wanks (350 miles long), which serves as the conventional N. boundary; the San Juan (125 miles), which drains Lake Nicaragua and separates the State of Nicaragua from Costa Rica on the S.; the Bluefields and the Rio Grande (230 miles). The low coast-belt, called the Mosquito Territory, is lined with salt lagoons—Pearl lagoon having an area of 200 square miles, and Bluefields lagoon half as much.

Mineralogy.—The mountain-spurs E. of the main chain are rich in minerals; gold is mined in the neighborhood of Libertad on to Matagalpa, in the heart of the country, and silver near the sources of the Coco in the N.; coal, copper, tin, iron, lead, zinc, antimony, quicksilver, marble, etc., exist, but are not worked.

Climate.—As a rule the climate varies between 70° and 90° F., and there is a dry season lasting from about December to May.

Soil.—The natural products of the soil are tropical. The forest trees include mahogany, rosewood, logwood, fustic, sandalwood, india-rubber, and numerous others that yield fancy woods, medicinal plants, gums and dyewoods. Large herds of cattle are bred and reared on the extensive plains of the center and E. The rich soil of the cultivated W. region yields maize (the staple food of the people), coffee, cocoa, sugar, cotton, rice, tobacco, indigo, and a great variety of tropical fruits.

Commerce.—The foreign trade in 1918 amounted to $13,684,743. The imports amounted to $5,929,803 and the exports to $7,754,940. The chief part of the exports were sent to the United States. The principal articles of export were coffee and cabinet woods. A considerable amount of sugar was also exported. The principal imports were cotton goods, clothing, and manufactures of iron and steel.

Religion.—The state religion is the Roman Catholic, but all creeds are tolerated.

Education.—The educational standard is low, in spite of three universities (so-called), at Managua, Leone, and Granada. There are about 350 elementary schools.

Government.—The country is governed by a president (elected for four years), a legislative assembly of 40 members, and a senate of 13; both of these bodies are selected by the people, the former for four, the latter for six years.

Railroads and Finance.—There are about 150 miles of railway, connecting the chief towns with Corinto. There are several lines of railway. A new line was under construction in 1919 between the Bambana and the Ocongtuas rivers, with a total length of 75 miles. Forty miles have been constructed during the year. The total debt in 1918 was about $6,000,000.

History.—Nicaragua, like the republic N. of it, was a center of Aztec civilization; the Aztecs were preceded by another race, likewise civilized, who have left stone sculptures and monumental remains. The Aztec influence survives in archæological ruins and relics and in the Indian dialects. Columbus sailed along the Mosquito coast in 1502. Twenty years later the country was overrun by the Spaniards under Gil Gonzales D'Avila, and in 1524 the city of Granada was founded. This town soon developed as the head of a stream of commerce that flowed up and down the San Juan river. In 1610 was founded Leon, the democratic rival of the aristocratic Granada. During the Spanish supremacy (after 1550) Nicaragua was a province of Guatemala. In 1821 it asserted its independence, and two years later joined the federation of the Central American states, a connection that lasted 16 years. The history of the country after the severance from Spain till 1865 is a record of war and dissension, war with Costa Rica, with Guatemala, and with Great Britain (1848), which had asserted a protectorate over the Mosquito Coast since 1655. This region was given up to Nicaragua in 1860. Between 1855 and 1860 the aristocratic and the democratic party were fighting, the latter being assisted by the adventurer William Walker. Since then Nicaragua has made laudable efforts to develop her resources and to advance along the path of civilization, and she now compares most favorably with her sister republics in Central America.

A bill providing for the construction of a canal across Nicaragua connecting the Atlantic and Pacific oceans was adopted in the United States Senate, Jan. 21, 1899. It provided that the canal should be completed in six years; should be capable of accommodating the largest ocean steamers; and should cost not over $115,000,000. The bill also guaranteed the neutrality of the canal. Politically, the most important provision of the bill was the authority it gave to the President to open negotiations with Great Britain for the abrogation of the Clayton-Bulwer treaty. Under this last provision a convention was

signed in Washington, Feb. 5, 1900, by Secretary Hay, representing the United States, and Lord Pauncefote, representing Great Britain, in which that provision of the Clayton-Bulwer treaty providing for a joint control of any canal across the isthmus was annulled. This convention was ratified by the United States Senate, Dec. 20, 1900, but it failed to meet the approval of the British Government owing to amendments made by the United States Senate. On Nov. 18, 1901, a second convention was signed in Washington by Secretary Hay and Lord Pauncefote; was submitted to the United States Senate for ratification Dec. 4, and was ratified by a vote of 72 to 6 on the 16th following.

NICARAGUA, LAKE OF, an extensive sheet of water in the republic of the same name; area, about 3,000 square miles; depth, 10 to 260 feet; length, 110 miles N. W. to S. E.; greatest breadth, 40 miles; mean breadth, 30 miles; 110 feet above the Pacific, from which it is separated by a strip of land 12 miles wide. The San Juan de Nicaragua river flows from its S. E. extremity into the Caribbean Sea, and at its N. W. extremity it is connected with the smaller Lake of Managua or Leon by the Tipitapa river. Steamers ply on it, as it forms a link in the traffic route across the isthmus of Central America. There are hundreds of islands, the largest, Ometepe, having two active volcanoes.

NICE, or **NICÆA**, in ancient geography, a city of Bithynia, in Asia Minor, on the E. shore of Lake Ascania. Antigonus rebuilt it 316 B. C., and named it Antigonea; but Lysimachus, having conquered this part of Asia, changed its name to Nicæa, in honor of his wife. It became a city of great importance. The celebrated Council of Nicæa, the first general council, was convened there A. D. 325, by the Emperor Constantine, in order to settle differences that had arisen in respect to the doctrines of Arius. This council was attended by upward of 300 bishops, of whom a great majority came from the East, besides presbyters, deacons, and others from all parts of the Christian world. The chief question was the Arian heresy; and the council decreed the excommunication of Arius (see ARIAN). The confession of faith adopted by this council is known as the NICENE CREED (*q. v.*). The 2d council of Nice, recognized œcumenic council of the Roman Catholics, assembled in 786 under the authority of Pope Adrian I. by the desire of Empress Irene. The bishops declared the veneration of images and the cross to be agreeable to sacred Scripture and reason, and to the teachings of the Church.

NICE (Italian Nizza), capital of the department of Alpes Maritimes, France, on the coast, 140 miles E. by N. of Marseilles and 110 S. W. of Genoa. On the N. of the city the hills rise in terraces and shield it from the cold winds. On the S. it faces the sea, which tempers the heat in summer. Owing to the advantages of its situation, Nice has for many long years been celebrated as a winter resort for invalids; the number of visitors is estimated from 15,000 to 40,000. The mean temperature of winter is 49° F., of summer 72°. Frost occurs but seldom. The city consists of three parts—the New Town on the W., the Old Town, and the Port on the E. The first of these is the part frequented by foreigners. Beautiful promenades stretch along the seashore, and are overlooked by villas and hotels. The most famous of these is the Promenade des Anglais. Numerous bridges across the little river Paglione (Paillon) connect the New Town with the Old or Upper Town. This part, with narrow streets, clusters at the foot of a rocky height, the Castle Hill; on the other (E.) side of this hill is the harbor, called Lympia. The Castle Hill is an isolated mass of limestone 318 feet high, formerly crowned by a strong castle, now in ruins, and is laid out in public gardens. The chief public buildings are the cathedral, the Gothic church of Notre Dame, the natural history museum, art gallery, library, observatory, casino, etc. The people manufacture artistic pottery, perfumery, and Italian pastes, grow flowers and fruits, the last of which they preserve, and produce inlay work in olive wood, in some of which a considerable export trade is carried on. The annual flower carnival attracts pleasure seekers from all parts of the world. The ancient Ligurian town of Nicæa, founded by a colony of Phocæans from Massalia (Marseilles), became subject to Rome in the 2d century B. C. It was in the hands of the Saracens during the greater part of the 10th century. Then, after existing as an independent city, it acknowledged the supremacy of the Counts of Provence and the House of Savoy (1388). From 1600 onward it was repeatedly taken by the French; and they kept possession of it from 1792 to 1814. In 1860 it was ceded to France by Sardinia (Savoy). Masséna was born near the city, and Garibaldi in it. Pop. about 150,000.

NICENE CREED, properly the CONSTANTINOPOLITAN - NICENE CREED, the

summary of articles of belief formulated by the first council of Nice, and the "Filioque" clause, to which the Greeks objected, having been added at the First Council of Constantinople, A. D., 381, under Pope Damasus I. The creed is recited daily in the Roman mass—all present genuflecting at the words *"Et homo factus est"*—and in the Communion office of the Anglican Church.

NICHOL, JOHN, a Scotch writer; born in Montrose, Forfarshire, Scotland, Sept. 8, 1833. He was a Professor of English Literature at the University of Glasgow (1861-1889), who did much to make American books popular in England. His numerous publications include: "Byron" and "Carlyle" in "English Men of Letters" series; "American Literature, 1620-1880" (1882). He was an ardent advocate of the Northern cause during the Civil War, and visited the United States at the close of the conflict. He died in London, England, Oct. 11, 1894.

NICHOLAS, the name of five Popes, as follows:

NICHOLAS I., Pope, elected in succession to Benedict III., in 858. He excommunicated Photius, patriarch of Constantinople, whose schism led to the separation of the Roman and Byzantine Churches. He died in Rome, 867.

NICHOLAS II., Pope; born in Burgundy. He became Archbishop of Florence, and succeeded Stephen IX. in 1058. He was opposed by a rival, who styled himself Benedict X.; but being disavowed by the council of Satri, the latter was obliged to forego his claim to the papal chair. This Pope assembled a council at Rome, and caused a decree to be passed which was very important in the subsequent elections to the tiara. He was succeeded by Alexander II. He died in 1061.

NICHOLAS III., Pope; born of a noble Italian family. He was elected in succession to John XXI., in 1277. He obtained from the emperor, Rudolph of Hapsburg, large grants of Italian territory; among the rest, the exarchate of Ravenna. He dispatched a number of missions to heathen countries. His successor was Martin IV. He died in 1280.

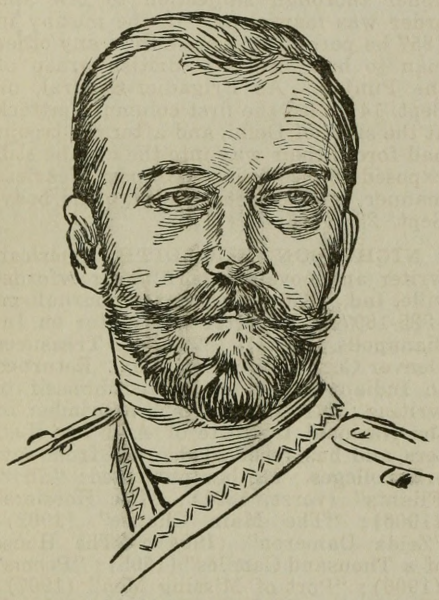
NICHOLAS IV., Pope; born in Ascoli, Italy. He was elected to the papal chair on the death of Honorius IV., in 1288, being the first member of the Franciscan order to become Pope. He endeavored to excite a new crusade, but without success. He died in 1292.

NICHOLAS V., Cardinal-Bishop of Bologna, became Pope after Eugenius IV., in 1447. He restored peace to the Roman and Western Churches, and caused the sovereigns and states of Italy to forget their feuds. He collected books and manuscripts, and ordered translations to be made of the Greek classics. The Vatican library was practically founded by him, and he embellished Rome with numerous fine edifices. He was an enlightened and distinguished Pope. He died in 1455.

NICHOLAS I. (NIKOLAI PAVLOVICH), Emperor of Russia, third son of the Emperor Paul I.; born near St. Petersburg, Russia, June 25, 1796 (old style). He ascended the throne in 1825. He made war with Persia in 1827-1828; joined in the treaty of London, which secured the independence of Greece, and made one of the allied powers who destroyed the Turkish fleet at Navarino in 1827. This affair led to war between Russia and Turkey, in which the latter was defeated, paid indemnity, and signed the treaty of peace at Adrianople in 1829. He suppressed the Polish insurrection which broke out in the following year with relentless severity. In 1848 Nicholas assisted Austria with an army corps in putting down the rising in Hungary. Early in 1852 began the Russian effort to take over the holy places and assume the protectorate of the Christians in Palestine. This led to the Crimean War, before the close of which Nicholas died from lung disease in St. Petersburg, Feb. 18, 1855 (old style).

NICHOLAS II., Emperor of Russia, son of Alexander III.; born in St. Petersburg, Russia, May 18, 1868. His mother was the Princess Dagmar, a daughter of King Christian IX. of Denmark. The course of his studies was by his father's wish, directed chiefly to modern history and languages, constitutional history, political and social economy, and the law and adminstration of his own country. During the famine of 1891 he was, at his own request, made president of the Committee of Succor, and worked hard in the organization of relief. As czarevitch he held several military commands in his own country—in the famous Préobrajensky regiment among others—and in England he had conferred on him in 1893 the Order of the Garter. He succeeded to the throne Nov. 1, 1894. He married the Princess Alix of Hesse-Darmstadt, grand-daughter of Queen Victoria of England, Nov. 26, 1894. His coronation took place with impressive and elaborate ceremonial at Moscow in May, 1896, and in August of the same year he commenced a tour which included visits to the Emperor of Austria and Germany, to the King of

Denmark, to Queen Victoria, and to the President of France. The visit to Paris was taken advantage of to accentuate the friendly understanding or alliance, as it may now be called, between France and Russia. This alliance was definitely announced on the occasion of the visit of President Faure to St. Petersburg in 1887. The Franco-Russian convention as an offset to the Anglo-Japanese entente



NICHOLAS II.

was further strengthened when the Czar visited Paris in September, 1901, and by the visit of President Loubet to St. Petersburg in May, 1902. The Russo-Japanese war led to revolutionary uprisings at the capital in 1905 that were vigorously suppressed. Nicholas II. in the negotiations that culminated in the World War was anxious to avoid a conflict, but at the same time was determined that Austria should not crush Serbia. (See WORLD WAR.) Russian reverses and German intrigue shook the government of the Empire in 1915-1916. The influence of the monk Rasputin on the Czar and his family created great discontent throughout the nation. His subsequent murder came too late; for the country was seething with revolution. The Duma met in March, 1917, and defied the Czar's attempt to dissolve it. Rodzianko, leader of the Duma, urged the Emperor to crush German intrigue and change his counsellors, if he would save his throne. The Czar paltered and delayed, and on March 15, 1917, he was forced to abdicate at Pskov for himself and his son in favor of the Grand-Duke Michael. The latter declined the honor until the National Assembly should decide what the future government was to be.

The imperial family were placed under arrest and after some months they were transferred to Tobolsk. Some time between night and morning of July 16-17, 1918, the Czar and his family were shot at Ekaterinburg in the Urals by the Executive Committee of the Ural District Soviet of the Workmen's, Peasants', and Red Army deputies.

NICHOLAS I., former reigning Prince or Hospodar, and King of Montenegro; born Oct. 7 (Sept. 25), 1841. After an educational course at Trieste and Paris, he succeeded his uncle, who had been assassinated in August, 1860. He married in the same year Princess Milona, the daughter of the vice-president of the Council of State. In 1890 the 30th anniversary of his accession was celebrated, and during 1896 the bicentenary of the foundation of his dynasty. His daughter, Princess Helen, married the Prince of Naples, now King Victor Emmanuel III. of Italy; and another daughter, Princess Anne, Prince Francis Joseph of Battenberg. Princess Malitza married the Russian Grand-Duke Peter, and Princess Stana, Duke George of Leuchtenberg. Prince Danilo, the eldest son, married, in 1899, the Duchess Jutta of Mecklenburg-Strelitz. In 1910 Nicholas celebrated the 50th anniversary of his rule and assumed the title of King of Montenegro. When the Austro-Germans overran the country in December, 1915, the King fled to France. On Nov. 8, 1918, he expressed himself in favor of a union of Montenegro with Jugoslavia. On Nov. 29 King Nicholas was deposed by the Montenegrin National Assembly, which voted for a union of Montenegro with Serbia under King Peter.

NICHOLAS, GRAND-DUKE; born in 1868. Russian General, Commander-in-Chief of the Russian army in the Great War (1914-1918). He was born in the capital city of St. Petersburg. In the Turkish War of 1877-1878 he served with distinction under his father, Grand-Duke Nicholas Nicholaevitch who commanded the Russian army in European Turkey. Later he was placed in command of a regiment, after which he was made Inspector-General of Cavalry. In 1906 he was placed in charge of the St. Petersburg military district, and at the outbreak of the war was called upon to take command of all the Russian armies. After

the Russian reverses in 1915, he was transferred to the command of the Russian forces in the Caucasus, where he aided both the Persian and British armies in Mesopotamia. After the Russian revolution, and subsequent overthrow of the Romanoffs, in 1917, he was said to have been tried and executed by the Bolsheviki. This report, however, was untrue, and the Grand-Duke escaped the fate of the Czar and the rest of the royal family.

NICHOLAS, ST., Bishop of Myra, in Lycia. He is believed to have lived under Diocletian and Constantine, and to have suffered persecution under the former; but little is known of his life. His feast day in the Roman calendar is Dec. 6; he is the patron saint of poor maidens, sailors, travelers, merchants, and children (Santa Klaus), and is one of the most popular saints in the Greek Church.

NICHOLAS II. LAND, a group of islands N. of Cape Chelyuskin, Asia. It was discovered in 1913 by Captain Vilkitski. The islands extend about 200 miles to the N. and N. W. to about 81° N., 96° E. The vegetation is scanty and the land is for the most part volcanic.

NICHOLS, EDWARD LEAMINGTON, American physicist; born at Leamington, England, 1854. Graduated from Cornell, 1875. Studied at Leipsic, Berlin, and Göttingen (Ph.D. 1879). Appointed to a fellowship in physics, Johns Hopkins. Worked in Edison's laboratory, Menlo Park. Professor of physics and astronomy, Central University, Kentucky, 1881. Physics and chemistry, University of Kansas, 1883. Professor of physics, Cornell, 1887. Member National Academy of Sciences, and President American Association for Advanced Science, 1907, and of American Physicist Society, 1907-1918. LL. D. and D. Sc., University of Pennsylvania and Dartmouth.

NICHOLS, ERNEST FOX, American scientist; born in 1869 at Leavenworth, Kan. He studied at Kansas Agricultural College, and at Cornell, Berlin, and Cambridge. From 1892 he taught physics at Colgate University, and Dartmouth from 1898, and at Columbia from 1903 to 1909, in which year he became head of Dartmouth. He studied radiation phenomena at Mount Wilson Solar Observatory. He has experimented in the measurement of heat waves, and heat radiation from stars and planets, and of the pressure due to radiation. His literary work has been done mostly in connection with his editorship of the "Physical Review."

NICHOLSON, JOHN, an English military officer; born in Dublin, Ireland, Dec. 11, 1822. In 1838 he joined the East India Company's service. On the breaking out of the Sikh war in 1845 he served in the campaign on the Sutlej. He was appointed assistant to the resident at the conquered capital, Lahore. During the Sikh rebellion of 1848 he greatly distinguished himself. The Punjab having finally become a British province, Captain Nicholson was appointed a deputy commissioner under the Lahore Board. His success in bringing the savage tribes under thorough subjection to law and order was marvelous. In the mutiny in 1857 he perhaps did more than any other man to hold firm the British grasp of the Punjab. As Brigadier-General, on Sept. 14 he led the first column of attack at the siege of Delhi, and after the troops had forced their way into the city he still exposed himself in the most fearless manner, and fell, shot through the body, Sept. 23, 1857.

NICHOLSON, MEREDITH, American writer and novelist; born at Crawfordsville, Ind., 1866. Engaged in journalism, 1885-1897; a reporter and editor on Indianapolis "News," 1899-1901. Treasurer Denver Coal Mining Company. Returned to Indianapolis and devoted himself to writing. Mr. Nicholson is a member of the National Institute of Arts and Letters and has received degrees from several colleges. He has published: "Short Flights" (verse, 1891); "The Hoosiers" (1900); "The Main Chance" (1903); "Zelda Dameron" (1904); "The House of a Thousand Candles" (1905); "Poems" (1906); "Port of Missing Men" (1907); "Rosalind at Red Gate" (1907); "Lords of High Decision" (1909); "Siege of the Seven Suitors" (1910); "A Hoosier Chronicle" (1912); "Otherwise Phyllis" (1913); "The Poet" (1914); "Valley of Democracy" (1918).

NICHOLSON, THOMAS, Methodist Episcopal clergyman and educator, born at Woodburn, Ontario, 1862. Educated at Toronto and Northwestern University, graduating from Garrett Bible Institute in 1892. Ordained 1884. Professor of philosophy and Bible literature and principal Academy, Cornell College (Iowa), 1894-1903. President Dakota University, 1903-1908. Secretary Board of Education Methodist Church, 1908. Has published: "Epworth League Bible Studies" (1901-1902); "Epworth League Devotional Topic Book" (1902); "Necessity for the Christian College" (1904); "Studies in Christian Experience" (1907).

NICHOLSON, WILLIAM GUSTAVUS, British soldier; born in Leeds, 1845, died in London, 1918; graduated from Wool-

wich and obtained his commission in the Royal Engineers. Served in India and the West Indies for nearly 30 years. In 1901 he was appointed Director-General of Mobilization and Intelligence in the War Office, in London. During the Russian-Japanese War (1904-1905) he was military observer with the Japanese forces in Manchuria. Became Chief of Staff in 1908 and so remained till 1912. During the World War he was appointed to inquire into the conduct of the campaigns in Gallipoli and Mesopotamia. Was promoted to rank of Field-Marshal and made a peer.

NICKEL, in chemistry, symbol, Ni; at. wt., 58.7. A tetrad-metallic element, discovered by Cronstedt in 1751, in combination with arsenic, in the copper-colored mineral arsenide of nickel; called by the miners kupfernickel. Its preparation is effected in various ways, the methods involving first the separation of the arsenic, copper, etc., with hydric-sulphide, and that of cobalt by chloride of lime or nitrite of potash. The solution of pure nickel is precipitated by potash, and the dry oxide mixed with oil or charcoal and exposed in a crucible to the heat of a blast furnace, whereby the metal is obtained as a fused mass. Nickel is silver-white, malleable and ductile, and as infusible as iron. Sp. gr., 8.28-8.66. It is magnetic at ordinary temperatures and dissolves in dilute sulphuric, nitric, and hydrochloric acids. Nickel forms several alloys, the most important being known as German-silver. Also, in the United States, a popular name for a small coin, consisting of nickel, value five cents. Nickel-arsenate = *Annabergite*, and *Xanthiosite;* nickel-arsenide = *Chloanthite, Nickeline,* and *Rammelsbergite;* nickel-bismuth = *Grünauite;* nickel-carbonate and nickel-hydrate = *Texasite;* nickel-glance = *Gersdorffite;* nickel-green = *Annabergite;* nickel-gymnite = *Genthite;* nickel-ocher, nickel-bloom = *Annabergite;* nickel-oxide = *Bunsenite;* nickel-pyrites = *Millerite;* nickel-silicate = *Alipite, Genthite, Noumeite,* and *Pimelite;* nickel-sulphate = *Morenosite;* nickel-sulphide = *Millerite;* nickel-stibine = *Ulmannite;* nickel-vitriol = *Morenosite.*

NICKEL STEEL. Iron has a strong affinity for nickel, and alloys with it in all proportions very readily. The following is the average composition of nickel steel as made in the United States:

Carbon	0.24-0.28 per cent.
Sulphur	0.02-0.03 " "
Manganese	0.60-0.70 " "
Phosphorus	0.01-0.03 " "
Nickel	3.00-5.00 " "

Physical Properties.—Resistance to corrosion is its principal peculiarity. Numerous tests have been made, especially in sea water, which is very destructive to iron or steel, the results of which have demonstrated the fact that nickel steel when used alone would outlast the best of ordinary steels. This was proved by tests with propellers, torpedo netting, metal sheathing for vessel bottoms, etc. There seems some doubt, however, as to its applicability to boilers, where its high elastic limit would permit much lighter construction. Some experiments indicate that nickel steel corrodes rapidly in pure water and in the presence of various boiler compounds, while on the other hand an English authority cites an experiment indicating a corrosion of but one-half to three-quarters that of ordinary steels.

Nickel steel is a noble metal, for while it has a remarkable resistance to applied stresses, yet it is almost as easily worked as soft steel, is not brittle while hot or cold, is not much affected by tempering or annealing as compared with carbon steel, and is remarkably homogeneous.

It is very common for tempered nickel steel to have a tensile strength of 200,000 pounds per square inch without being brittle. If we compare this with the 60,000 pounds for low carbon steel, we see that there is still plenty of room at the top, for most of the steel used today is low in carbon. Commander Eaton, U. S. N., says that the United States Government first bought nickel to use in steel in 1890, that the first nickel steel plate was tested in 1893, in July, and for a time all armor for United States vessels was made of nickel steel. See IRON and STEEL.

NICOBAR ISLANDS, a group of islands in the Indian Ocean, forming with the Andamans, to the S. of which group they lie, an extension of the great island chain of which Java and Sumatra are the principal links; area 634 square miles; pop. about 10,000. Nineteen in number, 12 of which are inhabited, they consist of two divisions—the N. low and planted with cocoanut trees, and the S. mountainous (2,000 feet) and covered with timber. Malaria prevails nearly all the year round; the temperature seldom moves outside the limits 80°-85° F. The people are a variety of the Malay race. There is an extensive trade in copra and cocoanuts. The archipelago was occupied by Denmark, 1756-1856. In 1869 it was annexed by Great Britain.

NICODEMUS, a member of the Jewish Sanhedrin, at first a Pharisee, and afterward a disciple of Jesus. He was early convinced that Christ came from

God, but was not ready at once to rank himself among His followers. In John iii: 1-20, he first appears as a timid inquirer after the truth, learning the great doctrines of regeneration and atonement. In John v.: 45-52, we see him cautiously defending the Saviour before the Sanhedrin. At last, in the trying scene of the crucifixion, he avowed himself a believer, and came with Joseph of Arimathea to pay the last duties to the body of Christ, which they took down from the cross, embalmed, and laid in the sepulcher (John xix: 39).

NICOLAIEV, one of the principal naval stations of Russia, on the Black Sea, in the province of Kherson, and 36 miles N. W. of the town of Kherson, at the confluence of the Ingul and Bug. It occupies a large space, is fortified and well built, with wide streets and a finely planted boulevard. It was founded in 1791, and since its connection with the Russian railway system its trade and importance have vastly increased. Pop. about 110,000.

NICOLAY, JOHN GEORGE, an American author; born in Essingen, Bavaria, Feb. 26, 1832; was brought to the United States in 1838 by his parents, and educated in the public schools. When 16 years old he became a printer in the office of the "Free Press," Pittsfield, Ill., where he rose to the post of publisher and editor. As proprietor of this paper he was recognized as a dominant political force in the State. During the famous campaign between Mr. Lincoln and Mr. Douglas, he took sides with the former, and when Mr. Lincoln was nominated for the presidency he appointed Mr. Nicolay his private secretary. Shortly before President Lincoln's assassination, he appointed Mr. Nicolay United States Consul at Paris, which post he held till 1869. In 1872 he was made marshal of the Supreme Court of the United States, and occupied that post for 15 years. As an author, Mr. Nicolay is best known from "Abraham Lincoln, a History" (1890), on which he collaborated with JOHN HAY (*q. v.*). He also contributed numerous magazine articles and sketches on President Lincoln. He died in Washington, D. C., Sept. 26, 1901.

NICOLL, WILLIAM ROBERTSON, SIR, a Scotch clergyman and editor; born in Lumsden, Aberdeenshire, Scotland, Oct. 10, 1851. He took an M. A. at Aberdeen University; was minister of the Free Church at Kelso for eight years; on account of ill-health he resigned; in 1887 started the "British Weekly," one of the most successful religious papers in England, and later became English editor of the "Bookman" and the "British Monthly." He also published a number of books, chiefly on religious or literary subjects.

NICOMEDIA, the capital of ancient Bithynia, at the N. E. angle of an inlet of the Propontis. It was built in 264 B. C. by Nicomedes I., and soon became one of the most magnificent and flourishing cities in the world; some of the later Roman emperors, such as Diocletian and Constantine the Great, selected it for their temporary residence. It suffered greatly from earthquakes. Hannibal committed suicide in a castle close by, and Constantine died near the city, which was the birthplace of the historian Arrian. The small town of Ismid now occupies its site.

NICOPOLIS, a town of Bulgaria, on the Danube; 56 miles W. of Rustchuk. The Berlin Congress of 1878 provided for the demolition of the fortifications. Here the Hungarians were defeated by the Sultan Bajazet in 1396; and the place has been more than once taken by the Russians (1810, 1827, 1877). Pop. about 6,000.

NICOTIANA, in botany, a genus of Solanaceæ, commonly known as tobacco.

NICOTINE, in chemistry, $C_{10}H_{14}N_2$; an acrid poisonous alkaloid found in tobacco leaves to the extent of from 1 to 5 per cent. It may be prepared by passing a current of steam through a mixture of lime and powdered tobacco, neutralizing the liquid which comes over with sulphuric acid, adding ammonia to liberate the nicotine, and dissolving the latter in ether. The ethereal solution yields almost pure nicotine. Soluble in water, alcohol, ether, and the fat oils, its characteristic reaction is the formation of a kermes-brown precipitate with tincture of iodine. Nicotine forms numerous salts.

NICTHEROY, former capital of state of Rio de Janeiro, Brazil, on the bay, 5 miles from city of Rio de Janeiro. Manufactures war munitions; the environs are beautiful. Pop. about 42,000.

NIEBUHR, BARTHOLD GEORG (nē'bör), a German historian and philologist; born in Copenhagen, Aug. 27, 1776. At the age of 18 he was sent to the University of Kiel, where he studied two years. After holding situations in a government office at Copenhagen, he was invited to Berlin in 1805, and entered the service of the King of Prussia. On the establishment of the University of Berlin, Niebuhr was chosen lecturer on

Roman history; and the lectures then delivered formed the basis of the great work by which his name is immortalized, "Roman History" (1811-1827). He served in the campaigns of 1813-1814, and was sent as ambassador to the papal court at Rome in 1816. Quitting Rome in 1823, he was appointed adjunct-professor at the new University of Bonn, where he occupied himself with the preparation of a new edition of his great work, and with a republication of the Byzantine historians. Niebuhr published, besides his history, "Minor Historical and Philological Writings," etc. The "Roman History" was translated into English by Hare and Thirlwall. He died in Bonn, Prussia, Jan. 2, 1831.

NIEHAUS, CHARLES HENRY, an American sculptor; born in Cincinnati, O., Jan. 24, 1855; educated in the public schools; studied art at the Royal Academy of Munich, Bavaria, where he won the first medal ever given to an American. Upon his return he received a commission to execute the Garfield monument at Cincinnati, perhaps his best work. After its execution, he spent some years in Rome, settling, upon his return, in New York. Of his other works there should be mentioned, besides some fine portrait busts and some good specimens of his art in various museums, numerous statues of public men in Hartford, Conn.; Washington, D. C.; Buffalo, N. Y.; Canton, O.; Memphis, Tenn.; Indianapolis, Ind.; etc. The bronze doors of Trinity Church, New York, are also his creations, as are the pediments of the Appellate Court Building in the same city. At the Pan-American Exposition of 1901 in Buffalo he had two large groups, "Mineral Wealth." There, as well as at Charleston (1902) and St. Louis (1904), he was awarded gold medals. In 1906 he was made a member of the National Academy.

NIELSEN, ALICE, American prima donna; born at Nashville, Tenn., 1876. She studied in San Francisco under Ida Valerga. She first appeared in Oakland as *Yum Yum* in "The Mikado," and later sang in "Robin Hood." After singing in Toronto and London, she studied for grand opera in Rome, and made her début at the Bellini Theater in Naples as *Marguerite* in "Faust." In 1906 she toured the United States with the Don Pasquale Company and with San Carlo Company in 1907-1908. In 1910-1911 she was with the Boston Opera Company, and from that time with the Metropolitan Opera Company of New York, playing many leading rôles.

NIEMEN, a river of Russia, whose lower course (70 of its 500 miles) lies within the province of East Prussia, where it is called the Memel; it rises a few miles S. of the city of Minsk. It is navigable to Grodno; below Tilsit it divides into two branches, which reach the Kurisches Haff each by four mouths. Along a large part of its course some of the most severe fighting between the German and Russian armies took place during the World War.

NIETZSCHE, FRIEDRICH (WILHELM) (nētsh'uh), a German writer; born in Röcken, Saxony, Oct. 15, 1844; was educated at Bonn; Professor of Classical Philology, University of Basle (1869-1880). His writings attracted a good deal of attention owing to their extreme character. He wrote: "The Birth of Tragedy from the Spirit of Music" (4th ed. 1895); "Thus Spake Zarathustra" (4th ed. 1895); "Beyond Good and Evil" (5th ed. 1895); "The Genealogy of Morality" (4th ed. 1895); "The Overturning of all Values"; "Twilight of the Idols"; "Antichrist"; etc. Nietzsche's philosophy was the idealization of *might* or, as he called it, *Will to Power*. It has been claimed extensively that his teachings and writings were to a great extent responsible for the militaristic spirit of Germany and thus, at least indirectly, for the World War. Most of these claims, however, are based on a very superficial study and an equally superficial understanding of his philosophy, the merits or faults of which remain still to be determined. In 1889 his mind became affected, and remained in this condition until his death on Aug. 25, 1900, at Weimar.

NIÈVRE (nē-āvr'), a central department of France, occupying a portion of the watershed between the Loire and the Seine, and bounded on the W. by the Allier and Loire rivers; area, 2,632 square miles; pop. about 300,000. Mountains belonging to the Morvan system, which forms the watershed between Seine and Rhône, divide the department into two great declivities. There are plateaus more or less fertile, vine-clad hills, and valleys rich in pastures; but the principal wealth of the department consists in its forests and minerals—coal, iron, and gypsum. The Nièvre, whence the name of the department, is an inconsiderable affluent of the Loire from the right. The three chief rivers—the Allier, Loire, and Yonne—are navigable, and the Yonne, which belongs to the system of the Seine, is connected with the Loire by a canal. More than a third of the whole surface is covered with forests. Good wine is made; the iron industry is

important, and pottery and glass are manufactured. Capital, Nevers.

NIGER, JOLIBA, ISSA, MAYO-QUARRA, or **KWARA**, a river of central Africa, rising near the W. coast; its length is estimated at about 2,900 miles; area of basin and that of its tributaries is 1,023,280 square miles. It rises in the region inland from Liberia and Sierra Leone. The Niger flows N. E. as far as Timbuktu. After passing Timbuktu, it flows E. for 200 miles; then turns S. E. through a rock country. Finally, bending more to the S., it is joined by a tributary of first-class size, the Benue, or Mother of Waters, a rival in volume which has come from a source 860 miles to the E. The united stream now passes through a series of bold picturesque hills by a narrow gorge, and eventually breaks up into one of the most remarkable mangrove-covered deltas of the world. In its course it passes through much fertile valley land, while numerous towns and villages stand on its banks, and a considerable canoe commerce is prosecuted. The exploration of the Niger has been principally accomplished by English travelers, and Great Britain holds the protectorate of its border-lands as far as Timbuktu. Above this city the control is in the hands of the French, who have steamers on the upper stream, and forts on its banks. Slaves were formerly nearly the only article of export from the Niger, but palm oil is now the principal staple, the delta outlets being known as Oil rivers.

NIGERIA, colony and protectorate of, a British possession in west Africa, constructed Jan. 1, 1914, and comprising districts formerly known as Lagos, Northern Nigeria, which includes the territories formerly in the occupation of the Royal Niger Company, and Southern Nigeria, formed from a part of the Niger Coast Protectorate and a part of the territories of the Royal Niger Company. Its boundaries are formed by the French Sudan, Lake Chad, Kamerun, the Gulf of Guinea, and Dahomey. There are three chief divisions: the colony itself, the Northern Province, and the Southern Province. The total area is about 336,000 square miles. Pop. about 16,500,000. The seat of the central government is at Lagos, the principal port. Other towns of importance are Warri, Burutu, Forcados, Sapele, Brass, Degema, Port Harcourt, Bonny, Opobo, Karo, and Calabar. The Governor-General in 1919 was Sir Hugh Charles Clifford. In 1917 slavery was legally abolished. The most important products are palm oil, palm kernels, hides and skins. Imports (1918) $36,121,000; exports (1918) $46,285,000. More than 11 per cent. of the exports go to the United States, almost 84 per cent. to the United Kingdom. There are about 1,000 miles of railways. The revenue in 1918 was £4,014,019; expenditure £3,459,774. The debt in 1917 was £8,470,593.

NIGHT HAWK, a species of goatsucker (*Chordeiles virginianus*), a bird universally known in the United States, 9½ inches in length and 23 in extent of wing. It is a bird of strong and vigorous flight, and its prey consists of beetles and other large insects. The other American species are the "chuck-will's widow" (*C. carolinensis*) and the "whip-poor-will" (*C. vociferus*), both of which, like the night hawk, arrive in May, and leave the States in September.

NIGHTINGALE, a European migratory species of birds, family of warblers or *Sylvicolidæ*. The males of the nightingale reach the S. counties of England sometimes in April, but more commonly not till the beginning of May; the females do not arrive till a week or 10 days after the males. Migrating from the S., they visit the N. countries for the purpose of breeding, and the famed song of the male is his love chant, and ceases when his mate has hatched her brood. If by accident his mate be killed, the male resumes his song; and will continue to chant very late in summer unless he can attract, as he commonly soon does, another female. The nightingale feeds chiefly on the larvæ of insects. The nest is built near the ground; the eggs are four or five in number, of a uniform dark-brown color; the young are fledged in the month of June, and are ready to accompany the parents in their migration S. in the month of August.

NIGHTINGALE, FLORENCE, an English philanthropist; born in Florence, Italy, May 15, 1820. At an early age she manifested a keen interest in suffering humanity, and from philanthropic motives she visited the chief military hospitals in Europe, and studied the chief nursing systems. From then on she devoted her life to the uplift of the profession of nursing and to the improvement and advancement of nursing and sanitation, both in hospitals and in the home. During the Crimean War (1854) the hospital accommodation was found to be very defective, and Miss Nightingale promptly volunteered to organize a select band of nurses at Scutari. The offer was accepted by the British War Office, and within a week Miss Nightingale was on

her way to the East, where she rendered invaluable service to the sick and wounded by her incessant labors in nursing and hospital reform. The strain, both mental and physical, which this work demanded permanently injured her health; yet notwithstanding her confinement to a sick-room, she continued to give her experience in the interest of hospital reform, and for this purpose she was consulted during the American Civil War and the Franco-Prussian War. She published "Notes on Hospitals" (1859), "Notes on Nursing" (1860), "On the Sanitary State of the Army in India" (1863), "Notes on Lying-in Institutions" (1871); "Life or Death in India" (1873): etc. She received many acknowledgments of her services to humanity from many governments. One of the figures of the Crimean Memorial in Waterloo Place, London, is that of Miss Nightingale. She died in London, Aug. 13, 1910.

NIHILISM, in ordinary language, nothingness; the state or condition of being nothing, nihility. In history, a term used to designate the Russian Socialist movement, which began about 1870, and may be divided into two distinct periods: (1) "The going among the peasants." A number of young men and young women of the upper class voluntarily went to work in the fields and the factories so as personally to carry on a Socialist propaganda and distribute Socialist literature. Their organs were the "Yperiod" (Forward!) of London and the "Workman" of Geneva. This lasted about six years, during which time there were 23 political trials of 417 persons, half of whom were condemned to exile in Siberia or to hard labor in the mines. (2) In 1878 the struggle with the government commenced. At a congress held at Lipezk, shortly after Solovieff's attempt on the life of Alexander II., the acquisition of political freedom was declared to be the first necessity. It was hoped to gain this by the formation of a legislative body, elected by the people, with guarantees for electoral independence, and liberty to agitate for reforms. This was demanded from Alexander III. shortly after the assassination of his predecessor as the price of cessation from violence. The Nihilist program is an agrarian socialism based on communal property. Before the rise of the Bolsheviks in 1917 the Nihilists were identified with French and Italian anarchists. Consult Kornilov's "Modern Russian History" (1917).

Nihilism in metaphysics is the doctrine that refuses a substantial reality to the phenomenal existence of which man is conscious.

NIIGATA, a seaport of Hondo, Japan; on a narrow strip of land at the mouth of the Shinano river; opened to foreign trade in 1869. The harbor does not admit of the entrance of vessels of foreign build, and the roadstead is exposed; the foreign trade has therefore remained only nominal. Pop. about 62,000.

NIJNI-NOVGOROD ("Lower Novgorod"), a famous commercial city of Russia, and capital of the province of the same name; at the confluence of the Oka with the Volga; 274 miles E. of Moscow. There is an upper city, containing the Kreml and many churches, a lower city, and a suburb. The great fair before the World War brought buyers and sellers from all climes between Germany and China. For the convenience of those frequenting the fairs, there was an enormous market hall, and 60 blocks of buildings for booths, containing more than 2,500 apartments separated by fireproof walls. There were three annual fairs, two of them of minor account. The third, beginning July 15 and continuing into September, was the greatest in the world. During the fair, the normal population was very largely increased. The value of goods sold at one of these fairs often exceeded $100,000,000. At these fairs all foreign goods were supplied in smaller quantities, those of Russian production showing an increase. Nijni-Novgorod, founded in 1221, was devastated on several occasions by the Tartars; its prosperity dates from 1817, when the great fair was removed to Nijni-Novgorod from Makariev after a great fire. Pop. about 110,000.

NIKALGEN, a local anæsthetic, discovered in 1916 by Gordon Edwards of San Francisco, Cal. It consists of a mixture of quinine, hydrochloric acid, and urea, and was largely used during the war by the Allies. It is applied by means of an atomizer in the form of a fine spray.

NIKE, in Greek mythology, the goddess of victory (Latin, *Victoria*). She was rewarded by Zeus with the permission to live in Olympus, for the readiness with which she came to his assistance in the war with the Titans. There was a temple to her on the Acropolis of Athens. She is usually represented with wings, and frequently bearing a palm branch and wreath.

NIKISCH, ARTHUR, a Hungarian musical conductor; born in Hungary in 1855 and educated at the Vienna Con-

servatory. He conducted for the first time in the Leipsic Theater, doing so without a score. In 1889 he accepted the position as conductor of the Boston Symphony Orchestra, where he remained until his return to Hungary in 1893. He then succeeded Reinecke as the conductor of the Gewandhaus concerts of Leipsic. From 1902 on he appeared nearly every year in London as conductor of the Philharmonic Orchestra of Berlin. His last appearance in the United States was in 1912, when he made a tour as conductor of the London Symphony Orchestra.

NIKKO, a town of Japan in the prefecture of Tochigi. It is famous as containing the tombs of several of the ancient kings. It is regarded as a holy place and is visited annually by thousands of pilgrims.

NILE, called by the Egyptians Hapi Mu, and by the Hebrews Sihor, the river of N. E. Africa, formed by the union of the Bahr-el-Abiad and the Bahr-el-Azrek. Captains Speke and Grant discovered that the first of these, the true Nile, flowed out of the Lake Victoria Nyanza. The second, the Blue Nile, has its source in Abyssinia. The White Nile, from its outfall from the Victoria Nyanza at the Ripon Falls, lat. 0° 20′ N., long. 33° 30′ E., flows N. W. and W. for about 230 miles, till it enters the Lake Albert Nyanza, within 30 miles of its N. extremity, whence the river again emerges. On issuing from the Victoria Nyanza the Nile rushes down due N. like a mountain torrent, running off at last into long flats and expanding so as to form what is called Lake Ibrahim Pasha. In this part of its course the river is navigable, and continues to be so till it reaches the Karuma Falls. From these falls to the Murchison Falls (120 feet in height), near the Albert Nyanza, the river forms a series of rapids. Between the two Nyanzas the Nile is known as the Victoria Nile or Somerset river. From Assuan to the sea the average fall of the Nile is two inches to a mile, and its mean velocity about 3 miles an hour. It waters and fertilizes the whole length of the land of Egypt. The delta of the Nile extends from lat. 30° 10′ N. to 31° 30′ N., and has a base on the Mediterranean of about 150 miles. In it the Nile spreads out into numerous streams, the two principal being those of Rosetta and Damietta. The total length of the Nile, from its exit from the lake to the sea, is about 3,766 miles, measured along its course, or 2,200 miles in direct distance.

A great feature peculiar to the great river of Egypt is that from its junction with the Atbara to its mouth, a distance of upward of 1,500 miles, it receives no affluent whatever. With the ancient Egyptians the river was held sacred; the god Nilus was one of the lesser divinities. Its annual overflow is one of the greatest marvels in the physical geography of the globe, for it has risen to within a few hours of the same time, and to within a few inches of the same height, year after year, for unknown ages. The question of the source of the Nile is at once the oldest and the most recent of geography. By reference to the map of Africa the latest results of modern research will be seen.

The greatest dam (or barrage, as it is called) in the world is near Assuan, at the first cataract of the Nile, and a second one at Assiout. In this region there is no rainfall and the people depend entirely on irrigation to water their crops, and as they have only one river all water must come from the Nile. The Assuan dam blocks the river and holds in reserve, in a vast reservoir, the surplus water which in the summer can be distributed over the fields, and make productive all the year round hundreds of square miles of otherwise barren land. See DAM; EGYPT.

NILES, a city of Michigan in Berrien co., 92 miles E. of Chicago on the St. Joseph river and on the Cleveland, Cincinnati, Chicago, and St. Louis and the Michigan Central railroads. It has extensive manufacturing interests, including paper, furniture, steel products, farm tractors, flour, etc. It has a public library. Pop. (1910) 5,456; (1920) 7,311.

NILES, a city of Ohio in Trumbull co., 58 miles S. E. of Cleveland. It is situated on the Mahoning river and on the Erie, the Pennsylvania, and the Baltimore and Ohio railroads. It is an important manufacturing center and produces sheet steel products, automatic presses, boilers, steam and electric cars, foundry and blast furnace products, mine and mill supplies, etc. There is a public library. The city is the birthplace of President McKinley, and a handsome monument has been erected to his memory. Pop. (1910), 8,361; (1920), 13,080.

NILSSON, CHRISTINE, a Swedish operatic singer; born in Wexiö, Sweden, in 1843; was educated in Sweden and France; made her début at Paris in "La Traviata" in 1864; and in London, where she appeared in 1867, soon took rank as one of the foremost soprano singers. She repeatedly visited the United States. She married (1872) M. Rouzand

(who died in 1882), and in 1887 Count de Miranda, when she retired.

NIMEGUEN (Dutch Nijmegen), a town in Holland; province of Guelderland; on the Waal river; 73 miles E. of Rotterdam. It is built on the slope of the Hoenderberg, "Hill of the Huns," on which the Romans formed the permanent camp of Noviomagum; and some of its streets are steep and narrow, but others are broad and handsome. On a neighboring height stood till 1796 a castle, said to have been founded by Cæsar and inhabited by Charlemagne; and toward the brow of this height there still stands a little sixteen-sided Romanesque baptistery of the 12th or 13th century. Nimeguen retains its Renaissance town hall (1554), adorned with medallions of German emperors, and the fine Gothic church of St. Stephen (dating from 1272). The manufactures include tobacco, eau de Cologne, metal goods, beer, etc. It is an important trading center for cattle and grain. Nimeguen is celebrated in history for its great peace congress, which on Aug. 12, 1678, concluded a treaty between France and Holland, on Dec. 13, between France and Spain, and on Feb. 5, 1679, between Austria and France. Pop. about 60,000.

NÎMES, or **NISMES** (nēm), a city of southern France, capital of the department of Gard, 62 miles N. W. of Marseilles; is an episcopal see; and consists of an old central quarter surrounded by handsome boulevards, beyond which are the modern quarters. Its manufactures are chiefly of silk and cotton goods; it has a considerable commerce especially in wine and brandy; and it is the great entrepôt of southern France for raw silk. Nîmes is chiefly remarkable for its Roman remains, including an ancient temple, with 30 beautiful Corinthian columns, now serving as a museum and known as the Maison Carrée; the amphitheater, a circus capable of seating 20,000 persons; the temple of Diana; the ancient Tour Magne, on a hill outside of the city, supposed to have been a mausoleum; and a Roman gateway. Nimes (ancient Nemausus) is supposed to have been built by a Greek colony, and was afterward for about 500 years in the possession of the Romans. In the 16th century it became a stronghold of Calvinism, and suffered much during the civil wars, as also by the revocation of the Edict of Nantes, and during the Revolution; but latterly it has become a busy manufacturing center. It is the birthplace of Daudet and Guizot. Pop. about 80,000.

NINE PINS, a game with nine pins or pieces of wood set on end, at which a ball is rolled for throwing them down.

NINEVEH, or **NINUS**, an ancient and famous city; capital of the great Assyrian empire; said in Scripture to have been founded by Ninus or Nimrud. It was situated on the E. bank of the Tigris, opposite to the present Mosul. According to classic writers the city was of vast extent, 480 stadia, or more than 60 miles in circumference. Its walls were 100 feet high, and furnished with 1,500 towers, each 200 feet in height. After having been for many centuries the seat of empire, it was taken, after a siege of several years, and destroyed by the united armies of the Medes, under Cyaxares, and the Babylonians, under Nabopolassar, about 625 B. C. When Herodotus, not quite 200 years afterward, and Xenophon visited the spot there remained only ruins. In recent times much excavation work has been done.

NING-PO, a treaty-port of China; province of Che-keang; stands in a fertile plain; 16 miles from the mouth of the Takia (Ning-po) river, and about 100 miles S. of Shanghai. It is surrounded by a wall 25 feet high and 16 feet thick, and contains numerous temples, colleges, etc., chief among them the temple of the Queen of Heaven, founded in the 12th century, but the present building, elaborately and richly ornamented, dates from 1680. The inhabitants make sedge hats and mats, grow cotton, catch cuttle fish, and carry on an active trade, especially in the export of silk goods, raw cotton, and green tea. Pop. about 670,000.

NIOBE, in Greek mythology, the daughter of Tantalus and wife of Amphion, King of Thebes, to whom she bore six sons and six daughters. Proud of her children, she despised Leto or Latona, who had only two children, Apollo and Artemis; whereupon Latona, enraged at her presumption, moved her children to destroy all the children of Niobe with their arrows. Niobe was changed into stone on Mount Sipylus, in Lydia. Such is the Homeric legend, which, however, was afterward much varied and enlarged. Only fragments exist of the tragedies of Æschylus and Sophocles on this theme, which was a favorite subject of ancient art. A noble group representing Niobe and her children was discovered at Rome in 1583, and is now in the Uffizi Palace at Florence. It is a Roman copy of a Greek work.

NIORT, the capital of the French department of Deux-Sèvres; on the Sèvre-Niortaise river; 43 miles N. E. of La

Rochelle and 109 S. W. of Tours. An important railway junction, it has an old castle, a city hall (1530), a fine public garden, and the 16th-century church of Notre Dame, with a spire 246 feet high. The dressing of leather and the manufacture of gloves are the leading industries. Niort in the 14th century was held for 18 years by the English. It was the birthplace of Madame de Maintenon. Pop. about 23,000.

NIPIGON, a lake in the province of Ontario, Canada; 30 miles N. W. of Lake Superior, with which it is connected by the Nipigon river; is about 70 miles long, but its deeply indented coast line measures 580 miles; greatest depth 540 feet. The lake is studded with hundreds of islands.

NIPISSING, a lake in the province of Ontario, Canada; N. E. of Lake Huron, into which (Georgian Bay) it drains through French river (55 miles); is about 50 by 28 miles.

NIRGUA, town in Yaracuy, Venezuela, 40 miles S. W. of Valencia. Region is fertile, coffee, sugar, tobacco, cocoa being abundant. Considerable cattle breeding, and some mining. Pop. about 11,000.

NISH, the chief town and commercial center of southern Serbia; in a vine-growing district; 130 miles S. E. of Belgrade; is the seat of a Greek bishop; and has a fairly strong citadel (1737). The place played a conspicuous part in the Turkish wars from 1375 to 1878, when it was occupied by Serbia. Here, on Sept. 23, 1689, the Austrians defeated the Turks. At the outbreak of the World War the Serbian Government was temporarily transferred to Nish. It was captured by the forces of the Central Powers when they overran Serbia in the winter of 1915. See WORLD WAR. Pop. about 25,000.

NISHAPUR, a town of Persia; capital of the province of the same name; 53 miles W. of Meshed, in a beautiful and fertile valley; was the birthplace and contains the grave of Omar Khayyám. Pop. about 15,000.

NITER, or **NITRE**, an orthorhombic mineral occurring in crusts, silky fibers, acicular crystals, or diffused through certain soils. Composition: Nitric acid, 53.4; potash, 46.6 = 100, corresponding to the formula, KNO_3.

In pharmacy it is exhibited in small doses as a refrigerant and diuretic, and in large doses as a vascular sedative in fever, especially in that of acute rheumatism. It has been found useful also in dropsy.

NITRATE, a salt of nitric acid.

NITRATE OF SILVER, lunar caustic; symbol, $AgNO_3$; prepared by dissolving silver in nitric acid. It crystallizes in colorless trimetric crystals, which dissolve in one part of cold water, and melt at 198° C. It is extensively used in photography and medicine.

NITRATE OF SODIUM, Chile saltpeter; symbol $NaNO_3$. Occurs abundantly as a natural product in Chile. Its chief use is as a fertilizer.

NITRIC ACID, the most important of the five compounds formed by oxygen with nitrogen; symbol HNO_3. When pure it is a colorless liquid, very strong and disagreeable to the smell, and so acrid that it cannot be safely tasted without being much diluted. It is known in the arts as "aqua fortis," and is commonly obtained by distilling niter (potassium nitrate) or Chile saltpeter (sodium nitrate) with strong sulphuric acid. Nitric acid contains about 76 per cent. of oxygen, a great part of which it readily gives up to other substances, acting thus as a powerful oxidizer. Thus many metals—such as copper, tin, silver, etc.—when brought into contact with this acid are oxidized at the expense of the acid with the production of lower oxides of nitrogen and an oxygenated metallic salt. Nitric acid, when moderately dilute, acts on organic bodies so as to produce a series of most useful substances, notably acetic, oxalic, and picrid acids, isatin or white indigo. Nitric acid is employed in etching on steel or copper; as a solvent of tin to form with that metal a mordant for some of the finest dyes; in metallurgy and assaying; also in medicine, in a diluted state, as a tonic and as a substitute for mercurial preparations in syphilis and affections of the liver; and also in form of vapor to destroy contagion.

Nitric acid is one of the most important essentials in the manufacture of explosives, and thus became of great importance during the World War. Its manufacture through artificial sources was developed in the various countries. The most important of these was the extraction of nitrate from the air. See NITRATE.

NITRIDE, a compound of nitrogen with phosphorus, boron, silicon, and the metals, *e. g.*, boron nitride, BN.

NITRIFICATION, the changing of nitrogenous organic matter or ammonia compounds into nitrates under certain conditions. First, the temperature must be suitable, for at about 5° C. the process is stopped; but with a rise of

temperature there is a proportionate increase of work—commencing at about 12° C.—till 37° is reached, which is the "optimum" temperature, and from this onward there is a diminution of action until the "maximum" temperature of 55° C. is reached, when nitrification ceases. These bacteroids are annihilated at a temperature of 90° C., although the same result will follow drying even at a much lower temperature. The second condition is the presence of oxygen; and the third is the presence of a salifiable base, such as lime, potash, soda, etc., without which nitrification cannot proceed. Under these conditions nitrification goes on in every fertile soil, the atmospheric nitrogen, nitrogenous organic matter, or ammonia compounds being converted, in the presence of lime or potash, into the corresponding nitrates of lime or potash; and from these nitric compounds plants derive the most or all of their nitrogen.

NITRO-BENZENE, an oily body prepared by gradually adding benzene to cold fuming nitric acid. It is a yellowish liquid with a sweet taste, and an odor of oil of bitter almonds. Much used by perfumers under the name of oil of mirbane, and manufactured in large quantities for the preparation of aniline and its derivatives.

NITROCELLULOSE, the product of the reaction between cellulose and nitric acid. The name is generally restricted to the product formed by the nitration of cotton, which consists of a mixture of nitrocelluloses and is known as *gun-cotton*. When strong acids are used and the process of manufacture properly conducted, guncotton consists chiefly of tri-nitrocellulose, $C_6H_7O_2(NO_3)_3$, but di-tetra and penta-nitrocellulose are usually present. Nitrocellulose was first made in 1832 by Braconnot, by treating starch with nitric acid. Its explosive properties were discovered by Schönbein in 1845. It is insoluble in water, soluble in a mixture of alcohol and ether, and in ethyl acetate, nitrobenzene, benzol, acetone, amyl acetate and ketone oils. When cotton is treated with nitric and sulphuric acid in the presence of water, *collodion cotton*, $C_{18}H_{21}O_6(OH)(NO_3)_8$ is produced. This material is used in the manufacture of collodion varnish, pyroxylin, artificial leather, celluloid, and many other products. The cotton used in making nitrocellulose must be free from oil and rosin, and after the acid treatment it must be washed until all traces of acid are removed.

NITRO COMPOUNDS, compounds in which one or more atoms of hydrogen are replaced by an equivalent quantity of nitryl (NO_2); thus, lactic acid $C_3H_6O_3$, becomes nitro-lactic acid $C_3H_5(NO_2)O_3$. The nitro compounds are nitro-marin, nitro-tartaric acid, nitro-saccharose, benzoic acid, nitro-carbolic acid, nitro-coumarin, etc.

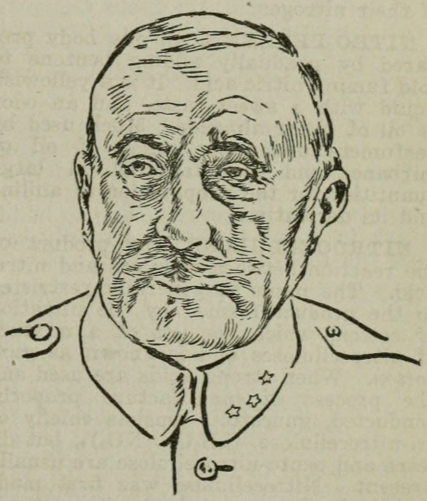
NITROGEN, N., at. wt. 14.01, colorless, odorless, tasteless gas, forming, approximately, four-fifths of the atmosphere. Slightly lighter than the air. Discovered in 1772 by Rutherford, in the University of Edinburgh. It can be prepared by passing air over some reagent which will readily react with and absorb oxygen, such as reduced iron, alkaline, pyrogallol, or phosphorus; or by liquefying air and distilling, when the more volatile nitrogen is vaporized. Nitrogen is found in all vegetable and animal life, usually in organic combination, and in varying quantities in the earth's crust in both organic and inorganic combination. It is a necessary constituent of plant and animal food. Certain legumes have the power of fixing the nitrogen of the air by means of root nodules, and obtain their supply in this way, while electric discharges in the atmosphere cause the union of nitrogen and oxygen, the resulting oxides of nitrogen being washed into the soil by rain. These sources are not sufficient, however, to enrich the soil to the extent needed for intensive cultivation, and by far the greater part of nitrogen is added, either in the form of decomposing organic matter (barnyard manure, guano, etc.) or inorganic salts (nitrates, ammonium sulphate, etc.). The most commonly used inorganic nitrogenous fertilizer is sodium nitrate or Chili saltpetre, $NaNO_3$, but it is believed that the supply of this material will become exhausted in less than forty years. Moreover, nitrogen in the form of nitric acid, nitrates, or ammonia is an important raw material in the manufacture of explosives, dyes, sodium bicarbonate, and other products, while ammonia is widely used for refrigeration. The supply of nitrogen in the atmosphere is practically inexhaustible, the air over every acre of ground being estimated to contain 31,000 tons of nitrogen, and many attempts have been made to manufacture nitrogenous compounds from this source. Three methods have given successful results on a manufacturing scale: (1) the formation of ammonia by combining the nitrogen with hydrogen; (2) the formation of oxides of nitrogen by passing an electric arc through air, and (3) the formation of cyanamide by absorbing nitrogen in calcium carbide, heated to white heat in an electric furnace.

NITROGLYCERIN, a violently explosive substance, easily prepared by dissolving glycerin in a mixture of equal measures of the strongest nitric and sulphuric acids, previously cooled and pouring the solution in a thin stream into a large volume of water, when the nitroglycerin is precipitated as a colorless heavy oil (sp. gr. 1.6). It is advisable to add the glycerin to the mixed acids in very small quantities at a time, and to cool the mixture in a vessel of water after each addition. When the nitroglycerin has subsided, the water may be poured off, and the oil shaken several times with water, so as to wash it thoroughly. The formation of nitroglycerin resembles that of guncotton, three equivalents of hydrogen being removed from the glycerin by the oxidizing action of the nitric acid, and three equivalents of nitric peroxide introduced in their place. This oil is far more violent in its explosive effects than guncotton, more nearly resembling the fulminates, though not so easily exploded. For blasting rocks the nitroglycerin is poured into a hole in the rock, and exploded by the concussion caused by a particular kind of fuse charged with a little gunpowder. It has been stated to produce the same effect in blasting as 10 times its weight of gunpowder, and much damage has occurred from the accidental explosion of nitroglycerin in course of transport. A drop of nitroglycerin is said to cause very violent headache, and in larger doses is decidedly poisonous.

NIVELLE, GENERAL GEORGES ROBERT, French army officer; born in 1857, educated at the Ecole Polytechnique and St Cyr. Early noted for his horsemanship, he entered the artillery and his first military service was in Algeria. During the Boxer Rebellion, Major Nivelle served with the Allied expeditionary force in the rescue of the Legations. At the outbreak of the World War Colonel Nivelle commanded the 5th Artillery of the 7th French Army Corps. He was with the French forces during the offensive in Alsace and was cited for bravery in capturing a German gun post. At the Battle of the Ourcq, in the first Battle of the Marne in September, 1914, as the Germans were crossing the river, Colonel Nivelle gathered together 18 guns and fired point-blank at the enemy, cutting them to pieces. Made a Brigadier-General, Nivelle fought at Soissons and broke the German line at Quennevières. Called to Verdun in March, 1916, he held the Germans at bay, and recaptured Forts Vaux and Douaumont on Oct. 23, 1916. Was appointed Commander-in-Chief in 1917. He visited the United States in November, 1920.

NIVELLES (Flemish Nyvel), a town of Belgium; province of Brabant; on the Thines river; 19 miles S. of Brussels. Its fine Romanesque church (1045) contains the relics of Pepin's daughter, St. Gertrude. In 1381 the townsfolk of Ghent were defeated here by Count Louis of Flanders, and 6,000 burned in a monastery. Has manufactures of linen, cotton, and lace. Pop. about 13,000.

NIXON, GENERAL SIR JOHN (ECCLES), British army officer; born Aug. 16, 1857. Served in India, holding staff appointments. Served in the Afghan War, 1879-1880; Zamusht expedition, 1879; (medal) Mahsud Waziri expedition, 1881. Chitral relief force (medal and brevet of Lieutenant-Colonel). Chief Staff Officer northwestern frontier of India, 1897-1898. Commanded a cavalry brigade in South Africa, 1901-1902 (medals and 4 clasps, C. B.). Commanded the Bengalore brigade, 1903-1906. Inspector-General Cavalry, India, 1906-1908. Commander of 7th Meerut division, 1903-1910; 1st Peshawar division, 1910-1912. Commander southern and northern armies of India, 1912-1915. Commanded the British Mesopotamian expedition from April, 1915, to January, 1916, when he retired, owing to ill health. Nixon was criticized for the failure of the expedition which led to the siege of Kut-el-Amara by the Turks and the surrender of General Townshend and the Anglo-Indian army. Has published "Notes for Staff Officers on Field Service."



GENERAL GEORGES ROBERT NIVELLE

NIXON, LEWIS, an American shipbuilder; born in Leesburg, Va., April 7, 1861; was graduated at the United States Naval Academy in 1882; sent to the British Royal Naval College, by the Navy Department; and was transferred to the construction corps of the navy in 1884. In 1890 he designed the battleships "Oregon," "Indiana," and "Massachusetts." He resigned from the navy to become superintendent of Cramps' shipyard, Philadelphia, Pa., and in 1895 he founded the Crescent shipyard, in Elizabeth, N. J., where in six years he built over 100 vessels, among them the submarine torpedo boat "Holland," the monitor "Florida," and the cruiser "Chattanooga." In 1898 he was appointed president of the East River Bridge Commission of New York. Succeeded Richard Croker as leader of Tammany Hall, 1901-1902. Commissioner Public Works for Borough of Richmond, New York City (1914); State Commissioner Public Works (1919); afterward Commissioner Public Service, New York City; author "Canal Tolls and American Shipping."

NOAH, the tenth male in descent from Adam, in the line of Seth; was the son of Lamech and the grandson of Methuselah. According to the Scriptural story he received the divine command to build an ark in which he and his family escaped the Deluge (Gen. v: 29-ix: 29).

NOAILLES, a French family which dates from the 11th century, and played an important part in history from the reign of Louis XIV. to the Revolution. Antoine (1504-1562) was ambassador in England in 1553-1556, and Admiral of France. Anne Jules (1650-1708), son of the first duke, commanded against the Huguenots and in Spain during the war of the Spanish succession, and was made marshal; while his brother, Louis Antoine (1651-1729), was Archbishop of Paris from 1695 till his death, and was made cardinal in 1700. The third duke, Adrien Maurice (1678-1766), won the marshal's baton in the wars of Louis XV. in Spain, Italy, and Germany. The fifth duke, Paul François (1739-1824), attained eminence as a chemist and was elected to the Academy of Sciences in 1777; his brother, Emmanuel Marie Louis (1743-1822), was French ambassador at Amsterdam (1770-1776), London (1776-1783), and Vienna (1783-1792). The sixth duke, Paul (1802-1885), wrote historical works, and was elected to Chateaubriand's chair in the Academy in 1849. His second son Emmanuel Victorien (born 1830), was ambassador at Washington (1872), Rome (1873), and Constantinople (1882-1886), and wrote works on the history and literature of Poland. A grandson of the third duke, Louis Marie (1756-1804), served in the American Revolutionary War under his brother-in-law Lafayette, embraced for a while the French Revolution, and defended San Domingo against the British.

NOBEL, ALFRED BERNHARD, a Swedish chemist and physicist; born in Stockholm, Sweden, Oct. 21, 1833. His father, Emmanuel Nobel, originally an architect, and appointed a professor of



ALFRED BERNHARD NOBEL

geometry at the age of 26, became interested in explosives, and founded extensive engineering and shipbuilding works at St. Petersburg, Russia; in 1859 he left these in charge of his second son, Louis, and, with the rest of his family returned to Stockholm where he founded the Noble firm engaged in the manufacture of explosives. In 1863 Alfred took out a patent for the manufacture of an explosive composed of nitroglycerin and ordinary blasting powder, and in 1864 a second patent. In 1867 he invented dynamite; in 1876 gela-

tinous nitroglycerin; in 1889 ballistite, which led the way to the invention of smokeless powder. The Nobel firm in 1886-1896 employed constantly 12,000 persons in the manufacture of dynamite alone, and in 25 years the firm never had a strike. Alfred invented also artificial gutta-percha; manufactured cannon, and, with his brother, Louis, developed the petroleum deposits at Baku, in the Caucasus. He subscribed half the sum for fitting out the ill-fated Andrée balloon expedition. He lived for a long time in Paris, but had a villa and laboratory at San Remo, Italy, where he died Dec. 10, 1896.

NOBEL PRIZES, FOUNDATION, AND INSTITUTES. Alfred Bernhard Nobel, the Swedish inventor, provided before his death that five prizes be every year distributed to individuals, who during each respective year had made the greatest contribution to progress and learning in the fields of physics, chemistry, physiology or medicine, literature, and international peace. The fund donated by him to these purposes was $9,200,000, of which the interest, usually about $200,000, is awarded by the trustees. The decision in the case of chemistry and physics was intrusted to the Swedish Academy of Sciences, in physiology and medicine to the Caroline or Medical Institute in Stockholm, and in peace to a committee of five, elected by the Storthing of Norway. The Nobel Foundation is formed of a president appointed by the government, and four other members chosen for a two-year term by fifteen deputies named by the bodies intrusted by the donor with the awards. The Foundation has care of the funds, to which one-tenth of the interest is annually added, while a fourth is deducted in the main for the use of the Nobel Institutes. These Institutes include that of the Swedish Academy, with a literary library of 38,000 volumes; the Nobel Institute for Physics and Chemistry of the Stockholm Academy of Sciences with a scientific library; and the Norwegian Nobel Institute, with a law library.

Awards have been made since 1901 and among the noted recipients have been W. K. Röntgen, G. Lippman, and G. Marconi in physics; Sir W. Ramsay, H. Moissan, and Marie Curie in chemistry; R. Koch and A. Carrel in medicine; B. Björnson, F. Mistral, G. Carducci, R. Kipling, M. Maeterlinck, and Rabindranath Tagore in literature; and Baron d'Estournelles de Constant, T. Roosevelt, and E. Root in international peace. The peace prize for 1919 was awarded to Leon Bourgeois, and for 1920 to Woodrow Wilson.

NOBILITY, that distinction of rank in civil society which raises a man above the condition of the mass of the people.

The ancient Romans were divided into *nobiles* and *ignobiles*, a distinction at first corresponding to that of patricians and plebeians. A new nobility afterward sprang out of the plebeian order, and obtained (336 B. C.) the right to rise to high offices in the state; and in course of time the descendants of those who had filled curule magistracies inherited the *jus imaginum*, or right of having images of their ancestors—a privilege which, like the coat-of-arms in later ages, was considered the criterion of nobility. The man entitled to have his own image was a *novus homo*, while the *ignobilis* could neither have his ancestor's image nor his own.

The origin of the feudal aristocracy of Europe is in part connected with the accidents which influenced the division of conquered lands among the leaders and warriors of the nations that overthrew the Roman empire, and is outlined in the article FEUDAL SYSTEM; and the evolution of the dignities of baron, count, earl, marquis, duke, and other ranks will be found under those several heads. In the subinfeudations of the greater nobility, originated a secondary sort of nobility under the name of vavasors, castellans, and lesser barons; and a third order below them comprised vassals, whose tenure, by the military obligations known in England as knight's service, admitted them within the ranks of the aristocracy. In France the allegiance of the lesser nobles to their intermediary lord long continued a reality; in England, on the other hand, William the Conqueror obliged not only his barons who held in chief of the crown, but their vassals also, to take an oath of fealty to himself; and his successors altogether abolished subinfeudation. The military tenant, who held but a portion of a knight's fee, participated in all the privileges of nobility, and an impassable barrier existed between his order and the common people. Over continental Europe in general the nobles, greater and lesser, were in use, after the 10th century, to assume a territorial name from their castles or the principal town or village on their demesne; hence the prefix "de," or its German equivalent "von," still considered over a great part of the Continent as the criterion of nobility or gentility.

After the introduction of HERALDRY (*q. v.*), and its reduction to a system, the possession of a coat-of-arms was a recognized distinction between the noble and the plebeian. On the Continent who-

ever has a shield of arms is a nobleman; and in every country of continental Europe a grant of arms, or letters of nobility, is conferred on all such a noble's descendants. In England, on the other hand, the words noble and nobility are restricted to the five ranks of the peerage constituting the greater nobility, and to the head of the family, to whom alone the title belongs. Gentility, in its more strict sense, corresponds to the nobility of continental countries.

The higher nobility, or nobility in the exclusive sense, of England consist of the five temporal ranks of the peerage—duke, marquis, earl, viscount, and baron, who are members of the Upper House of Parliament. Archbishops and bishops are lords temporal, but not peers. The dignity of the peerage is hereditary, but in early times was territorial, the dignity originally being attached to the possession of lands held directly from the crown in return for services to be performed to the sovereign. Later, peers were created by writ of summons to attend the king's council or parliament, but now the creation of a new peer is always made by letters-patent from the crown. In order to the efficient carrying out of the appellate jurisdiction of the House of Lords there are now a limited number of life peers, styled Lords of Appeal in Ordinary. By the Appellate Jurisdiction Act, 1876, as amended 1887, it is enacted that every such lord, unless he is otherwise entitled to sit in the House of Lords, shall by virtue and according to the date of his appointment be entitled during his life to rank as a baron, and shall be entitled to a writ of summons to attend and to sit and vote in the House of Lords. But his dignity is not to descend to his heirs. A peerage is forfeited by attainder for high treason; attainder for felony forfeits a peerage by writ, not by patent; on attainder, peerage cannot be restored by the crown, only by an act of Parliament. Ladies may be peeresses in their own right, either by creation or by inheritance. The wives of peers are also styled peeresses.

In France a limited body of the higher nobility, styled the peers, were in the enjoyment of privileges not possessed by the rest. The title of duke was subject to strict rule, but many titles of marquis and count, believed to be pure assumptions, were recognized by the courtesy of society. The head of a noble family often assumed at his own hand the title of marquis; and if an estate was purchased which had belonged to a titled family the purchaser was in the habit of transferring to himself the honors possessed by his predecessor—a practice to which Louis XV. put a stop. Immediately before the Revolution 80,000 families claimed nobility, many of them of obscure station, and less than 3,000 of ancient lineage. Nobles and clergy together possessed two-thirds of the land. Practically, the estimation in which a member of the French nobility was held depended not so much on the degree of his title as on its antiquity, and the distinction of those who had borne it. The higher titles of nobility were not borne by all members of a family; each son assumed a title from one of the family estates—a custom productive of no small confusion. Unlike "roturier" lands, which divided among all the children equally, noble fiefs went to the eldest son. The Revolution overthrew all distinction of ranks. A new nobility was created by the Emperor Napoleon I. in 1808, with titles descending to the eldest son. The old nobility was again revived at the Restoration.

The aristocracy of Venice had its origin in commerce; and, though untitled, they were among the most distinguished class of nobles in Europe. On the other hand, in Florence, in the 14th century, under a constitution purely mercantile, nobility became a disqualification from holding any office of the state.

The nobility of Spain boasts of a special antiquity and purity of blood, a descent from warriors and conquerors alone. Hidalgo, in Spanish, is a term implying gentility or nobility; the hidalgo alone has in strictness a right to the title "Don," which has latterly been used by persons who have no proper claim to it about as extensively as "Esquire" in England. The higher nobility are styled grandees; the class of nobility below them are called Titulados.

In the United States the National Constitution declares (Art. I., Sec. 9), "No title of nobility shall be granted by the United States; and no person holding any office of profit or trust under them shall, without the consent of Congress, accept of any present, emolument, office, or title, of any kind whatever, from any king, prince, or foreign State." Congress sparingly gives its consent for a person in the service of the government to accept a decoration or other mark of honor from another government. Private citizens are under no constitutional restrictions.

NOBLE, EUGENE ALLEN, American educator; born in Brooklyn, N. Y., 1865; graduated from Wesleyan University,

1891; studied theology in Garrett Biblical Institute, in Illinois; ordained Methodist Episcopal minister, in Bridgeport, Conn., where he remained till 1895; head master of Centenary Collegiate Institute, Hackettstown, N. J., from 1902 to 1908; president Goucher College, Baltimore, Md., from 1908 to 1911; president Dickinson College, Pa., from 1911. Has contributed to many magazines on educational subjects.

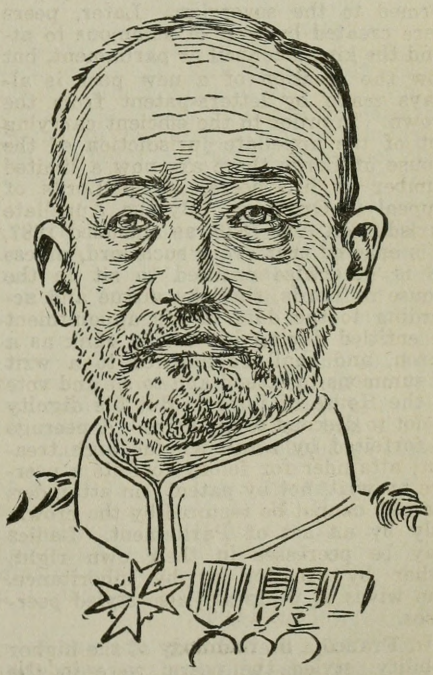
NODES, in astronomy, the two points in which the orbit of a planet intersects the plane of the ecliptic, the one through which the planet passes from the S. to the N. side of the ecliptic being called the ascending node, and the other the descending node. As all the bodies of the solar system, whether planets or comets, move in orbits variously inclined to the ecliptic, the orbit of each possesses two nodes, and a straight line drawn joining these two points is called the line of nodes of each body. As the earth moves in the plane of the ecliptic she has no nodes. The places of the nodes are not fixed points on the plane of the ecliptic, but are in a constant state of fluctuation, sometimes advancing (E.), and at other times receding (moving W.). This motion is produced by the mutual attractions of the planets, which tend to draw each of them out of the plane of its orbit; and it depends on the relative positions of the planets with respect to another planet whether that planet's nodes shall advance or recede. The revolutions of the planetary nodes are accomplished very slowly, never amounting to as much as a single degree in a century. The nodes of the lunar orbit retrograde with much greater speed under the disturbing influence of the sun. It is owing to the fact that they complete a revolution in nearly 18 Julian years and 11 days that series of eclipses regularly recur in that period. See ECLIPSE.

NODOSARIA, in zoölogy, a genus of *Polythalamia* or multilocular foraminifera. The additional segments, each of which is essentially similar to a Lagena, are added to the primordial chamber in a straight line. The ornamentation is various, chiefly thin ribs and delicate points. Range in time from the Permian to the present day.

NODZU, MICHITSURA, COUNT, Japanese soldier; born at Satzuma, in 1840. He fought in the rebellion of 1877 and was honored by the emperor. He became General in 1894 and led the Japanese forces at Ping-Yang in the China war. During the war between Japan and Russia he had a responsible part in several campaigns, and contributed to the defeat of the Russian forces in the battle of Mukden. In home politics he labored in the development of an educational system and was for some years inspector-general of education. After the war with Russia he was made field-marshal. He died in 1908.

NOGALES, a town of Arizona, the county-seat of Santa Cruz co. It is on the Southern Pacific railroad. Its industries include cigar factories, mining machinery works, etc. Its public buildings include a town hall, county court house, and the ruins of the Tumacacori, built about 1687. The town is separated from the Mexican town of the same name by only a street. Pop. (1910) 3,514; (1920) 5,199.

NOGENT-LE-ROTROU, a town of France, department of Eure-et-Loir; on the Huisne river; 93 miles S. W. of



GENERAL NOGI

Paris; is a well-built place, with the ruined château of the great Sully, his violated sepulcher, and a statue of General Saint-Pol, who fell before Sebastopol. The Germans here won two fights, on Nov. 21, 1870, and Jan. 6, 1871. Pop. about 8,000.

NOGI, MARESUKE, COUNT, Japanese soldier; born at Hagi, Choshin, in

1849. He fought in the civil war of 1877 and distinguished himself at Kinchow in the China-Japanese war. During the war with Russia he commanded a division at first, and organized the attack on Port Arthur, which resulted in its seizure by the 3d Army after numerous bloody battles on its slopes. He has also been credited with the victory over the Russian forces at Mukden, which yielded when Nogi came upon them in the rear. He was an old-fashioned type of Japanese statesman and on the death of the emperor he and his wife committed hara-kiri. He died in 1912.

NOGUCHI, HIDEYO, Japanese physician; born in Inawashiro, Yama, Fukushima, in 1876. He was educated in the public schools of Japan, and was taught French, English, German, and Chinese under private tutors. He graduated from Tokyo Medical College in 1897, and studied at the University of Pennsylvania 1901-1903, later studying a year at the Statens Serum Institute, Copenhagen. In 1904 he became connected with the Rockefeller Institute, New York. He has brought about the cultivation of syphilitic organisms, demonstrated treponema pallidum in paresis and locomotor ataxia, instituted the skin test for syphilis, and has made similar contributions to medical science.

NOISSEVILLE, a village of France, 5 miles E. of Metz, where, on Aug. 31-Sept. 1, 1870, Bazaine attacked the German besiegers of Metz with 120,000 men and 600 guns. He had some success on the first day, against the 41,000 men and 138 guns commanded by Manteuffel; but on the second day gave up the attempt to break through the German line, which had been reinforced during the night by 30,000 men and 162 guns.

NOLA, an episcopal city of Italy; 16 miles E. N. E. of Naples; is built on the site of one of the oldest cities of Campania, founded by the Ausonians, and taken by the Romans in the Samnite War, 313 B. C. Augustus died here A. D. 14. Pop. about 14,000.

NOMAD, a roaming or wandering shepherd; one who leads a wandering life, and subsists by tending herds of cattle which graze on herbage of spontaneous growth. In history, nomads, or nomades, are tribes of men without fixed habitation. The principal nomadic tribes of antiquity were those of southern Russia and the interior of Asia, from whom sprang, in the decline of the Roman empire, many of the tribes which overran western Europe, and, at a later era, those which conquered empires in western and southern Asia. The vast regions of Mongolia are inhabited by nations which still retain their wandering habits.

NO MAN'S LAND, a name applied to outlying districts in various countries, especially at one time to what now corresponds mainly to Griqualand East; also to a territory of 80,000 square miles in South Australia; to a strip ceded by Texas to the United States in 1850, for many years without any government, now constituting Beaver co., Okla.; to a small island 3 miles S. W. of Martha's Vineyard, Mass.; and to a strip of land bordering on Pennsylvania, Delaware, and Maryland, still in dispute. Used in the World War, 1914-1918, to describe the ground between the German and the Allies front lines.

NOME, a city in Alaska, situated on the Seward peninsula, and on the shore of Norton Sound. In July, 1899, gold was discovered on the beach at Nome and a rush of settlers followed. The maximum of gold ever found in the district was in 1906, when $7,500,000 was discovered. Since that time the output has steadily decreased in value. The city's location exposes it to severe storms from the Sound, which caused severe distress in the early days of temporary dwellings. Nome is the judicial center of Seward Peninsula and has a court house, banks, commercial houses, etc. Pop. (1910) 2,600; (1914) 2,600; (1920) 852.

NONCOMMISSIONED OFFICER, THE, a soldier whose rank is between private and commissioned officer. In the United States a noncommissioned officer is an enlisted man accepted for 7 years, and receives appointment from his superior officer. An officer is commissioned by the President and the Senate must confirm the appointment. Noncommissioned officers in the United States Army are: 1.—Sergeant major, regimental, and sergeant major, senior grade, coast artillery corps; master electrician, quartermaster's department, and master electrician, coast artillery corps, master signaler, chief musician, engineer, coast artillery patrol. 2.—Ordnance sergeant, quartermaster sergeant, quartermaster corps, sergeant 1st class, quartermaster corps, 1st class, signal service. 3.—Quartermaster sergeant and commissary sergeant, regimental; electrician sergeant, 2d class, coast artillery corps; master gunner, coast artillery corps. 4.—Sergeant major, squadron and battalion; sergeant major, junior grade, coast artillery; color sergeant; battalion quartermaster sergeant, engineer and field artillery. 5.—First sergeant; drum

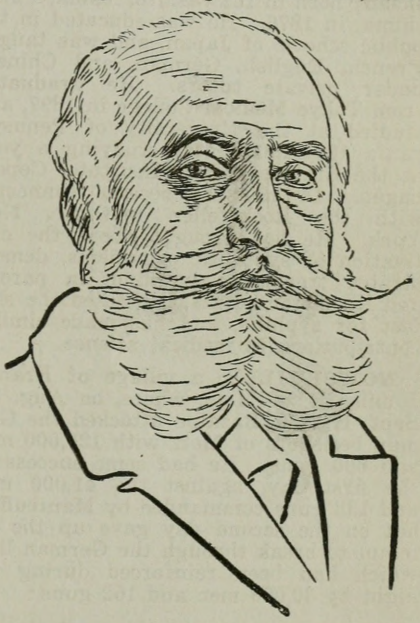
major, chief musician; chief trumpeter; foreman, coast artillery company. 6.—Sergeant; quartermaster sergeant, company; staff sergeant. 7.—Corporal. Noncommissioned officers being called on to serve in more responsible position in emergencies, only the most intelligent are selected. In the United States army every year a number are enabled to obtain commissions.

NONCONFORMISTS, in English history, those who declined to conform their worship to that by law established. They were of two kinds: First, those who, being religious, worshipped nowhere; second, those who attended the services of some other religious denomination than the Established Church. The name was first applied to those who declined to conform to the enactment of the Act of Uniformity of Edward VI., passed in 1549. It was revived and applied to the 2,000 clergymen, who had to surrender their livings on account of their inability to conform to the more celebrated Act of Uniformity of Charles II., first enforced on Aug. 24, 1662. Etymologically viewed, a Dissenter and a Conformist somewhat differ. The former word denotes that he feels differently from Churchmen, that his sympathies go in a different direction; the latter word refers, not to his feelings, but to his action with respect to public worship.

NORD, a department of France in the extreme N. (whence its name), corresponding with the former province of French Flanders, and bordering on Belgium and the Strait of Dover; area, 2,193 square miles; is composed of two parts, or at least contracts near the middle at Armentières, on the Lys, to a very narrow strip. It is watered by the Scheldt and the Sambre, with their affluents, and by numerous canals. Next to that of the Seine, it is the most densely-peopled department of France. In blood the people are Flemish and Walloon in about equal proportions. The soil is fertile, well cultivated, and yields more abundant harvests than any other part of the country; the fisheries are productive, the mineral wealth very great, especially in coal; and for its manufacturing industries Nord is in several respects the foremost of French departments—iron, machinery, porcelain, glass and mirrors, paper, candles, soap, chemicals, beet-sugar, and cotton, woolen, linen, and silk cloths being all made on a large scale. It is abundantly equipped with railways and navigable streams. The department possesses five fortresses of the first class and has been the scene of many great campaigns and battles. The chief town, Lille; chief port, Dunkirk.

In the World War (1914-1918) the department was the scene of heavy fighting between the Allies and Germans in October and November, 1914, and in April and May, 1915. The department remained largely in German hands until October, 1918, when the Allies drove out the invaders. Pop. about 2,000,000.

NORDAU, MAX SIMON, a German author; born in Pest, Hungary, July 29, 1849; followed various avocations, studying and practicing medicine, traveling, and writing for the press till 1880, when



MAX SIMON NORDAU

he went to Paris, and devoted himself to literature. He wrote a number of books, of which the best known, perhaps, in the United States is "Degeneration" (1893). He became conspicuous in the Zionist movement. Among his other works are: "Paradoxes" (1885); "Drones Must Die" (1899); "The Dwarf's Spectacles" (1905); "The Integrity of History" (1911); "Conventional Lies of Civilization" (1912). During the World War he at first attacked the Germans and later turned against the French.

NORDENSKJÖLD, BARON NILS ADOLF ERIK, a Swedish Arctic explorer; born in Helsingfors, Finland, Nov. 18, 1832; In 1857 he naturalized

himself to Sweden, and was appointed head of the mineralogical department of the Royal Museum at Stockholm. During the next 20 years he frequently visited Spitzbergen; in 1864 he completed the measurement of an arc of the meridian there, and mapped the S. of the island. After two preliminary trips to the mouth of the Yenisei, by which he proved the navigability of the Kara Sea, he successfully accomplished (June, 1878-September, 1879), in the celebrated "Vega," the navigation of the Northeast Passage, from the Atlantic to the Pacific along the N. coast of Asia. On his return he was made a baron of Sweden (1880), and during the next five years published the results of the journey in "Voyage of the Vega Round Asia and Europe" (1881), "Scientific Results of the Vega Expedition" (1883), and "Studies and Investigations" (1885). To Greenland, too, he made two expeditions; members of his party on the second occasion (1883) reached a point 140 miles distant from the E. coast, but without finding the ice-free interior Baron Nordenskjöld believed to exist. Three years later he published a book on the icy interior of Greenland. He died in Stockholm, Sweden, Aug. 12, 1901.

NORDENSKJÖLD, NILS OTTO, Swedish explorer; born in Småland, 1869; graduated Upsala University, 1894; joined exploring party to Patagonia and another to Alaska; explored coast of Greenland with Danish party under Amdrup, in 1900; headed a party into Antarctic regions in 1901, in which expedition he was unfortunate enough to be shipwrecked, he and his party being rescued by Argentine gunboat. Explored Greenland in 1909. Is Professor of Geography at Gothenburg University and has written a number of books on his explorations.

NORDHAUSEN, a town of Prussian Saxony; at the S. base of the Harz Mountains, and the W. end of the fertile Goldene Aue ("golden plain"), on the Zorge river. There are extensive distilleries of corn brandy and manufactures of tobacco, sugar, leather, chemicals, etc. Dating from 874, and in 1253 created a free imperial city, Nordhausen embraced the Reformation in 1522, and in 1803 fell to Prussia. Pop. about 35,000.

NORDICA, LILLIAN, an American opera singer; born in Farmington, Me., in 1859; family name, Norton. She studied at the Boston Conservatory of Music and afterward in Paris and in Italy. In 1882 she married Mr. Gower, who died a short time afterward. She sang with great success in England, Germany, and on the Continent, and was a favorite in her native country. Being very desirious to sing in Wagner's operas in Bayreuth, she went there and appealed to Mme. Wagner for permission to do so. This granted, she studied German and the rôle of Elsa in "Lohengrin," in which she made a triumphant appearance. *Marguerite* in "Faust" was another famous part. In 1896 she married Zoltain F. Dŏme, who had appeared for the first time in opera at the Bayreuth Festival, in 1894 as *Parsifal.* Was a member of Hammerstein's Manhattan Opera Co. (1901). Married George Young, American banker (1909). Died 1913 on the island of Java as the result of exposure from the wreck of the steamer "Tasman."

NÖRDLINGEN, a town of Bavaria; on the Eger river; 44 miles N. W. of Augsburg; it has a Gothic church (restored 1880), with a high tower and fine organ, and manufactures carpets. Here took place, Sept. 16, 1634, the great battle in which the Swedes were defeated by the Imperialists with a loss of 12,000 killed and wounded.

NORDSTRAND, an island of Prussia, on the W. coast of Schleswig; area, 21 square miles. The greater part of it was swept away in 1634 by a flood, which drowned 15,000 persons.

NORE, a sandbank in the estuary of the Thames; 47 miles from London. Off its E. end is a floating light which revolves 50 feet above high water. The name is commonly applied to the portion of the estuary in the vicinity of the Nore light and sandbank. It was here that the outbreak of the fleet, the "mutiny at the Nore," broke out on May 20 till June 13, 1797. The ringleader, Richard Parker, styled president of the "Floating Republic," was hanged June 30 from the yardarm of his ship.

NORFOLK, a city of Nebraska, in Madison co., 75 miles S. W. of Sioux City. It is on the Elkhorn river and on the Chicago and Northwestern and the Union Pacific railroads. It is the center of an important farming and stock-raising region and is also important commercially. It has manufactories of flour, cereal, concrete, packing houses, threshing machine works, etc. It is the division headquarters of the Northwestern railroad. It contains a State hospital for the insane, Federal court house, public library, a park, etc. Pop. (1910) 6,025; (1920) 8,634.

NORFOLK, a city and port of entry in Norfolk co., Va., on the Elizabeth

river, and on the Seaboard Air Line, the Atlantic Coast Line, the Chesapeake and Ohio, Southern, Norfolk and Western, and Virginia railroads; 18 miles from Fort Virginia. Here are a United States Naval Hospital, United States custom house, Norfolk Academy, Old St. Paul's Church, Confederate Monument, libraries, hospitals, parks, clubs, and churches. The city has electric street railroads, gas and electric lights, a good sewerage system, waterworks, several National banks, and a number of daily and weekly newspapers. During the World War the navy yards at Norfolk and Portsmouth were enormously developed. The Government spent over $500,000,000 in the naval district of which Norfolk was the headquarters. The navy yard has an area of 400 acres. It was also an army supply base during the war. A large export trade is carried on in canned goods, early fruits and vegetables, cotton, coal, oysters, and peanuts; for the latter Norfolk is the largest market in the world. The commerce of the port in 1919 was valued at $3,039,023,886 and the local industries include lumber, knit goods, iron, wire fence, guano, and fertilizing establishments, etc. Pop. (1910) 67,452; (1920) 115,777.

NORFOLK. A county of England, bounded on the N. and E. by the North Sea, on the W. by Cambridgeshire, and on the S. by Suffolk County. Its total area is 2,053 square miles. It is chiefly an agricultural and stock-raising country, but there are important manufactories of textiles. The chief rivers are the Ouse, Yare, and Bure. Pop. about 550,000.

NORFOLK ISLAND, an island in the W. Pacific; about half-way between New Zealand and New Caledonia; 400 miles N. N. W. of the former. The coasts are high (mean altitude, 400 feet) and steep, and the surface generally uneven, rising in Mount Pitt to 1,050 feet. The island has an area of 10½ square miles. The soil is fertile and well watered, and the climate healthful. Norfolk Island was discovered by Cook in 1774. Between 1788 and 1805, and again between 1826 and 1855, it was a penal settlement for convicts sent from New South Wales. In 1856 many of the inhabitants of PITCAIRN ISLAND (*q. v.*) were transferred thither by the British government. The population includes a number of Melanesian boys and girls being educated at Bishop Patterson's mission station of St. Barnabas, Norfolk Island being the headquarters of the diocese Melanesia, which was founded in 1861. The people govern themselves, under the superintendence of the government of New South Wales; they fish, farm, and supply provisions to passing vessels. Pop. about 1,000.

NORHAM CASTLE, the border fortress of the bishops of Durham; on the Tweed river; 8 miles S. W. of Berwick. Founded in 1121, and deemed impregnable in 1522, it has memories of Kings John, Edward I., and James IV., but is known best through "Marmion." The picturesque ruins comprise a great square keep, 70 feet high.

NORMAL SCHOOL, a school for the education of teachers.

NORMAN, SIR HENRY, English writer, born in Leicester, then came to this country and studied at Harvard University, finishing his education at Leipsic, Germany. Returning to America, he began an agitation for the conservation of Niagara Falls, with the result that land was acquired on both sides, by New York State and Canada respectively. Joined the staff of the "Pall Mall Gazette," then of the "London Chronicle." Was member of Parliament from 1900 to 1910. Retired from journalism in 1910, and began traveling through the Far and Near East, corresponding for British publications.

NORMANDY, an ancient province of France, bordering on the English Channel, now divided into the departments of Seine-Inférieure, Eure, Orne, Calvados, and Manche; anciently comprised a portion of the kingdom of Neustria, and was ceded to Rollo, Rolf, or Raoul, by Charles III., in 911. William I., Duke of Normandy, invaded England in 1066, and established a Norman dynasty, thereby uniting Normandy with the latter country. Philip Augustus conquered it in 1204, the French holding it till 1417, when it was recovered by the English, who held it till 1450, when it was finally wrested from them by Charles VII.

NORMANS (literally "north-men"), the descendants of the Northmen who established themselves in northern France, hence called Normandy. Besides the important place occupied in history by the Normans in Normandy and England, bands of Normans established themselves in S. Italy and Sicily, and Norman princes ruled there from the middle of the 11th till the end of the 12th century.

NORRBOTTEN, largest province in Sweden, bordering on Russia and Gulf of Bothnia. Includes part of Lapland, and has many lakes and rivers, with dense forests. Little agricultural produce, but considerable minerals. Area 40,870 square miles. Pop. about 150,000.

NORRIS, FRANK, American novelist; born at Chicago, Ill., March 5, 1870. Studied art in Paris, 1887-1889; took special course at University of California and Harvard, 1890-1895; war correspondent for a San Francisco newspaper in South Africa at the time of the Jameson raid; editor of "The Wave," San Francisco, 1896-1897. His published works are: "Yberville" (1891); "Moran of the Lady Letty" (1898); "McTeague" (1899); "The Octopus," first of a trilogy, the epic of the wheat (1901); "Blix," and "A Man's Woman" (1900); "The Pit" (1903); "The Wolf," the last part of the trilogy, was left unfinished at the author's death in 1902. A volume of his short stories, "The Third Circle," was published in 1909.

NORRIS, GEORGE WILLIAM, United States Senator from Nebraska, born in Ohio in 1861. By means of working on farms and by teaching he graduated from Baldwin University, Ohio, and later from the law school. Admitted to the bar in 1883. In 1885 he moved to Nebraska and was appointed judge of the 14th Nebraska District in 1895. He resigned in 1903 to become the successful Republican candidate for Congress. During his ten years in the House of Representatives he led the insurgent wing of the Republican party against Speaker Cannon, and finally succeeded in having the House pass rules greatly limiting the speaker's powers. In 1913 he was elected to the Senate, and re-elected in 1919. In the Senate he was opposed to the declaration of war against Germany, and likewise opposed to the Treaty of Versailles which closed the war.

NORRIS, KATHLEEN, American story-writer, born at San Francisco in 1880. Took a special course of study at the University of California. Married Charles Gilman Norris in 1909. Since 1910 Mrs. Norris contributed stories to the "Atlantic Monthly," and to the popular magazines, including "McClure's," "The American," "Everybody's," "Ladies' Home Journal," "Woman's Home Companion." Her books are: "Mother" (1911); "The Rich Mrs. Burgoyne" (1912); "Poor Dear Margaret Kirby" (1913); "The Treasure," and "Saturday's Child" (1914); "Story of Julia Page" (1915); "Heart of Rachel" (1916); "Martin, the Unconquered," and "The Undertow" (1917).

NORRISTOWN, a borough and county-seat of Montgomery co., Pa.; on the Schuylkill river, the Schuylkill canal, and the Philadelphia and Reading, the Stony Creek, and the Pennsylvania railroads; 16 miles N. W. of Philadelphia. Here are a Friend's Home for the Aged, Charity Hospital for the Insane, Masonic Temple, street railroad and electric light plants, waterworks, National banks, and several daily and weekly newspapers. The borough has pipe-covering and steel-casting works, shirt factories, machine shops, glass works, carpet mills, iron works, hosiery, cigar factories, wire, rolling, cotton, and woolen mills, etc. Pop. (1910) 27,875; (1920) 32,319.

NORRKÖPING, a town of Sweden, ranking next in manufactures after Stockholm; at the head of the Bravik river; 113 miles S. W. of Stockholm. First founded in 1384, it has been several times destroyed by fire. The rapid river Motala, which connects Lake Vetter with the Bravik, affords water power for the many manufactories, among which are cloth mills, cotton spinning and weaving, manufactures of sugar, paper, tobacco, etc., and shipbuilding (gunboats, etc.). Here Charles IX. (1604) and Gustavus IV. (1800) were crowned. Pop. (1917) 58,154.

NORSE, the language of Scandinavia. Old Norse is represented by the classical Icelandic, and still with wonderful purity by modern Icelandic. The literature includes the early literature of the people of Norway, Sweden, and Iceland.

NORTE, RIO GRANDE DEL (rē'ō grän'dā del nor'tā), a river of Mexico, rising in the Rocky Mountains and emptying into the Gulf of Mexico; length about 2,000 miles. Its mouth is 1,200 feet wide, but is barred so as to afford entrance only to boats.

NORTH, FREDERICK, 8TH LORD NORTH AND 2D EARL OF GUILFORD, an English statesman; born April 13, 1732. He was educated at Eton and Oxford. When only 22 he entered the House of Commons; became a Lord of the Treasury in 1759; Chancellor of the Exchequer and leader of the House of Commons in 1767; and prime minister in 1770. He was largely responsible for the measures that brought about the loss of the American colonies. In 1778 he renounced the right of taxing the colonies, already seeing that the war was hopeless, and in 1782 he resigned. Fox's dislike of the terms of peace with America led him to enter into a coalition with North, whom he had for so many years inveighed against. North and Fox took office under the Duke of

Portland in 1783, but the coalition destroyed Fox's popularity, and the Portland administration only lasted a few months. He died Aug. 5, 1792.

NORTH, SIMON NEWTON DEXTER, statistician, born in Clinton, N. Y., in 1849, he graduated from Hamilton College in 1869, and from that year till 1886 was managing editor of the Utica "Morning Herald." From 1886 to 1888 he was editor and joint proprietor of the Albany "Express" and then till 1903 was secretary of the National Association of Wool Manufacturers and editor of the "Quarterly Bulletin." From 1903 to 1909 he was director of the United States census. He was chairman of the Tariff Commission to Germany in 1906 and president of the American Statistical Association in 1910, in which year he edited the "American Year Book." His books include: "An American Textile Glossary" and "First Official Pistol Maker of the United States."

NORTH ADAMS, a city in Berkshire co., Mass.; on the Hoosac river, and on the Boston and Maine and the Boston and Albany railroads; 20 miles N. E. of Pittsfield. It comprises the villages of Greylock, Braytonville, Blackington, and Beaver. Here are the A. J. Houghton Public Library, North Adams Library, high school, North Adams Hospital, waterworks, electric lights, electric railroads, several National and savings banks, and several daily and weekly newspapers. The chief manufactures are tanned leather, lumber, iron castings, machinery, boots and shoes, and cotton, woolen, and print goods. Near by is the E. terminus of the Hoosac tunnel. Pop. (1910) 22,019; (1920) 22,282.

NORTHALLERTON, the capital of the North Riding of Yorkshire, England, 30 miles N. N. W. of York. It has a fine cruciform church, Norman to Perpendicular in style; and sites of a Roman camp and a Norman castle of the bishops of Durham. At Standard Hill, 3 miles N., was fought, on Aug. 22, 1138, the great battle of the Standard, in which Archbishop Thurstan routed David I. of Scotland, and which got its name from the banners of St. Peter, John of Beverly, and Wilfrid, hung out from a car in the English host. Pop. about 5,000.

NORTH AMERICA. See AMERICA.

NORTHAMPTON, a city and county-seat of Hampshire co., Mass.; on the Connecticut river, and on the New York, New Haven, and Hartford, and the Boston and Maine railroads; 17 miles N. W. of Springfield. It comprises the villages of West Farms, Mount Tom, Smith's Ferry, Loudville, Leeds, Florence, and Bay State. Here are the Burnham and Capen schools, Clarke Institute for Deaf Mutes (endowed by John Clarke with $3,000,000), SMITH COLLEGE (*q. v.*), the State Lunatic Asylum, Dickinson Hospital, Old Ladies' Home, the Soldiers' and Sailors' Memorial Hall, the First Congregational Church, of which Jonathan Edwards was pastor, libraries, People's Institute, clubs, and the Hillyer Art Gallery. The city has waterworks, electric street railroads, electric lights, a number of National and savings banks, and daily and weekly newspapers. The manufactures include caskets, shovels, hoes, furniture, paper, brushes, pocket-books, wire, baskets, bicycles, sewing machines, buttons, silk goods, oil stoves, sewing silk, cutlery, cotton and woolen goods, etc. Pop. (1910) 19,431; (1920) 21,951.

NORTHAMPTON, a borough of Pennsylvania, in Northampton co. It is on the Central of New Jersey and the Lehigh Valley railroads. Pop. (1910) 8,729; (1920) 9,349.

NORTHAMPTON, a parliamentary and municipal borough of England, capital of the county of same name, on the left bank of the Nene, which is connected with the Grand Junction canal. Northampton has one of the three remarkable round churches of the country—a Norman structure. The staple manufacture is boots and shoes for home and export trade. The currying of leather is also carried on on a large scale. There are also iron and brass foundries, breweries, corn mills, etc. Iron-stone is found in the neighborhood, and smelting furnaces are at work. Pop. (1917) 82,471.

NORTHAMPTONSHIRE, a midland county of England with a total area of 914 square miles. It is chiefly an industrial county, but there are also important agricultural interests. The chief rivers are the Nene, Welland, and Avon. The most important products are ironware, boots and shoes. Northampton is the capital. Pop. about 325,000.

NORTH ANDOVER, a town of Massachusetts in Essex co., 28 miles N. of Boston. It is on the Merrimac river and on the Boston and Maine railroad. It is an attractive residential community and is also a manufacturing center of importance. There are several large woolen mills and manufactories of

woolen-mill machinery. Pop. (1910) 5,529; (1920) 6,265.

NORTH ATTLEBORO, a town in Bristol co., Mass.; on the New York, New Haven, and Hartford railroad; 30 miles S. W. of Boston. It comprises the villages of Adamsdale, Falls Village, Robinsonville, and Oldtown. Here are the Richards Memorial Library, Holmes Memorial Building, Elks' Home, high school, street railroad, electric lights, and a National bank. It has extensive manufactories of cotton yarn, braid, silverware, and jewelry. Pop. (1910) 9,562; (1920) 9,238.

NORTH BERWICK, a fashionable watering-place of Haddingtonshire, Scotland; at the entrance to the Firth of Forth, 23 miles E. N. E. of Edinburgh. Behind it rises conical North Berwick Law (612 feet). Tantallon Castle 3 miles E., fronting the Bass Rock is a magnificent ruin, finely described in Scott's "Marmion." A stronghold of the Douglases, it resisted James V. in 1528, but in 1639 was "dung down" by the Covenanters. Robert III. made North Berwick a royal burgh.

NORTH BRADDOCK, a borough of Pennsylvania in Allegheny co., 10 miles S. E. of Pittsburgh. It is on the Pennsylvania railroad. It is an important manufacturing community, the chief industry being the manufacturing of steel rails. It is also an attractive residential town. Pop. (1910) 11,824; (1920) 14,928.

NORTHBRIDGE, a town of Massachusetts in Worcester co., 12 miles S. E. of Worcester, on the Blackstone and Mumford rivers, and the New York, New Haven and Hartford railroad. The town includes several villages. It has a public library, a hospital and important manufactories of cotton-mill machinery, cotton, silk, paper, etc. Pop. (1910) 8,807; (1920) 10,174.

NORTH BRITAIN, a name often given to Scotland, it forming the extreme N. part of the island of Britain.

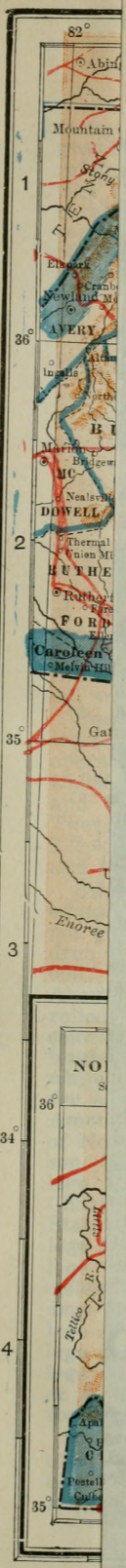
NORTH CAPE, the extreme N. point in Europe in lat. 71° 10′ N. It is not, however, on the continent, but on the island of Magerö. The extreme N. point on the continent is Cape Nordkyn (lat. 71° 6′ N.), 6 miles farther S. than the North Cape, and some 45 miles to the E. of it.

NORTH CAROLINA, a State in the South Atlantic Division of the North American Union; bounded by Virginia, South Carolina, Tennessee, Georgia, and the Atlantic Ocean; one of the original 13 States; number of counties, 100; capital, Raleigh; area, 48,500 square miles; pop. (1900) 1,893,810; (1910) 2,206,287; (1920) 2,559,123.

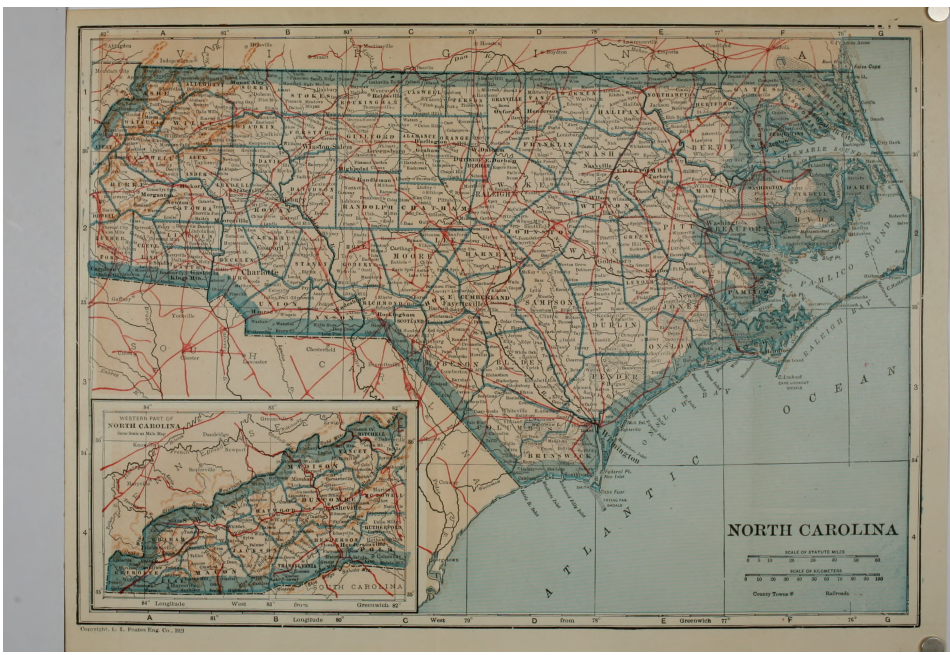
Topography.—The E. and larger portion of the State is an undulating country descending toward the low and sandy coast. The W. part is mountainous, being crossed by two ranges of the Appalachian system, one forming the Tennessee boundary. These ranges bear different names, according to locality; such as Black, Stone, and Smoky Mountains. The E. range known as the Blue Ridge incloses an irregular plateau. The highest points are Mount Mitchell, 6,732 feet, and Clingham's Peak, 6,619 feet, in the border range; and Grandfather Mountain, 5,897 feet; and Sugar Mountain, 5,312 feet; in the Blue Ridge range. The coast line has a length of 400 miles and consists of a range of low islands and sand bars, locally known as "banks," separated from the mainland by shallow sounds. The largest of the latter are Albemarle and Pamlico Sounds. From the "banks" in many places project promontories, dangerous because of their shoals, Cape Hatteras, Cape Lookout, and Cape Fear being the chief ones. The principal rivers are the Cape Fear, flowing 200 miles through the center of the State; Roanoke, and Chowan, flowing into the State from Virginia, and the Neuse, and Tar, emptying into Pamlico Sound. Along the coast are numerous swamps and peat bogs. The great Dismal Swamp of Virginia projects into the State, and there is a large swamp between the Albemarle and Pamlico Sounds.

Geology.—The mountain ranges of North Carolina are principally of Azoic formation, and the sandy E. portion of Tertiary and Quaternary deposits. The Azoic region is represented by gneiss, granite, and crystalline schists and contains two narrow and irregular strips of coal-bearing sandstone. The State has very small mineral production. A small amount of gold is mined and there is also a small silver production. Other mineral resources are phosphate-rock, alum, graphite, bismuth, kaolin, whetstone, sapphires, amethysts, emeralds, corundum, garnet, and tourmaline.

Soil and Productions.—The swamp land when drained, and the river bottoms have exceedingly fertile soil and yield enormous crops, especially of rice and cotton. The N. counties known as the Bright Tobacco Belt, which extends from the Piedmont almost to the coast, produces a large percentage of the yellow tobacco of the United States. The


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mountainous sections are valuable as grazing lands and well adapted to stock raising and dairy farming. The production and value of the leading agricultural crops in 1919 were as follows: corn, 55,100,000 bushels, valued at $101,935,000; oats, 3,767,000 bushels, valued at $3,993,000; wheat, 7,225,000 bushels, valued at $16,834,000; tobacco, 310,240,000 lbs., valued at $166,289,000; hay, 1,040,000 tons, valued at $25,168,000; peanuts, 4,756,000 bushels, valued at $11,605,000; cotton, 875,000 bales, valued at $154,000,000; potatoes, 4,930,000 bushels, valued at $8,036,000; sweet potatoes, 9,858,000 bushels, valued at $13,604,000.

Manufactures.—The number of manufacturing establishments in the State in 1914 was 5,507; the average number of wage earners was 136,847; capital invested was $253,842,000; wages paid was $46,039,000; materials used valued at $169,942,000; and the value of products was $289,412,000. The chief manufactures included cotton goods, fertilizers, flour, furniture, leather, lumber, oil, and tobacco.

Banking.—On Oct. 31, 1919, there were reported 85 National banks in operation, having $9,906,000 in capital, $8,055,704 in outstanding circulation, and $7,115,810 in United States bonds. There were also 471 State banks, with $13,468,000 capital, $6,408,000 surplus, and $196,489,000 in resources.

Education.—Owing to various reasons educational conditions in the State are not good. There are about 780,000 children of school age, of whom about 525,000 are white and 254,000 colored. About 410,000 white children are enrolled in the schools and about 200,000 colored children. There are about 14,000 teachers, of whom about 10,000 are white. The total annual expenditures for school purposes is about $5,000,000. Among the colleges are the University of North Carolina at Chapel Hill, Davidson College at Davidson, Trinity College at Durham, Biddle University at Charlotte, Shaw University and the State Agricultural and Mechanical College at Raleigh, and Wake Forest College at Wake Forest. The women's colleges include the Salem Female Academy at Salem, Claremont Female College at Hickory, the Baptist Female College at Raleigh, Greensboro Female College at Greensboro, Asheville College at Asheville, and Oxford College at Oxford.

Churches.—The strongest denominations in the State are the Regular Baptist, South; Regular Baptist, Colored; African Methodist; Methodist Episcopal, South; Presbyterian, South; Methodist Episcopal; Methodist Protestant; Christian; and Disciples of Christ.

Transportation.—The total railway mileage in the State in 1917 was about 5,000. The roads having the largest mileage are the Southern Railway and the Atlantic Coast Line.

Finances.—The receipts for the biennial period ending Dec. 1, 1918, amounted to $12,665,351, and the disbursements to $11,850,430. There was a balance on hand of $1,039,543. The State has an outstanding debt of about $10,000,000.

Charities and Corrections.—There are hospitals at Morgantown, Raleigh, and Goldsboro; a State prison at Raleigh; various schools for the blind and deaf and a home and industrial school for women.

State Government.—The governor is elected for a term of four years. Legislative sessions are held biennially and are limited in length to 60 days each. The Legislature has 50 members in the Senate and 120 in the House. There are 10 representatives in Congress. The State government in 1920 was Democratic.

History.—North Carolina was first partially colonized by a body of English under Raleigh in 1585, but no permanent settlement was made till 1663 when Charles II. made a grant of the territory to eight English gentlemen. In 1705 an internecine conflict took place among the colonists with reference to the claims of two rival governors. From 1711 to 1713 a war was waged with the Tuscaroras and other Indian tribes, who were ultimately reduced to subjection, the Tuscaroras going to New York and becoming one of the Six Nations. In 1769 the colony declared against the right of the home government to levy taxation. North Carolina united with the other colonies in the Declaration of Independence and made the first declaration at Charlotte, May 20, 1775. A partisan warfare next ensued between the patriots and the loyalists, which latter were in strong force throughout the State. On March 15, 1781, General Green, with a force of 4,500 men, was attacked at Guilford Court House by a body of British troops, 2,000 strong, commanded by Lord Cornwallis, but the British, though claiming victory, were put in such plight that the surrender of Cornwallis at Yorktown was a necessary sequence. The National Constitution was adopted in 1789. The State joined the Southern Confederacy May 20, 1861, and furnished some of the very best troops in the Confederate army, having 125,000 in service and los-

ing 40,000 by wounds and disease. The present constitution was amended in 1875, and again in August, 1900, when the suffrage was amended so that after Jan. 1, 1908, no one who came of age that year or afterward, who is unable to read and write, can vote.

NORTH CAROLINA COLLEGE OF AGRICULTURE AND MECHANIC ARTS, an institution maintained by the State of North Carolina at West Raleigh for the promotion of scientific agriculture and industrial education. The main courses are in chemistry, civil and electrical engineering, and mechanical engineering. There is no arts and science course, the studies being all technical. The State maintains an agricultural experiment station at West Raleigh to cooperate with the college. Both the State and the United States appropriate money for the support of the institution. The grounds and buildings, including a large farm property, are valued at about $1,100,000, while the total enrolment in 1915 was 702.

NORTH CAROLINA, UNIVERSITY OF, a coeducational non-sectarian institution in Chapel Hill, N. C., founded in 1795; reported at the close of 1919: Professors and instructors, 105; students, 1,316; volumes in the library, 85,000; grounds and buildings valued at $290,000; benefactions, $1,000; income, $325,427; president, H. W. Chase, Ph. D.

NORTH DAKOTA, a State in the North Central Division of the North American Union; bounded by Manitoba, Saskatchewan, Minnesota, South Dakota, and Montana; admitted to the Union, Nov. 2, 1889; counties, 53; capital, Bismarck; area, 70,195 square miles; pop. (1890) 182,719; (1900) 319,146; (1910) 577,056; (1920) 646,872.

Topography. — The surface of the State is chiefly undulating prairie with occasional low hills. The great plateau of the Missouri extends across the State E. of the Missouri river, and the Turtle Mountains on the Canadian border contain the highest points in the State, Butte St. Paul, 2,500 feet, and Bear Butte, 2,400 feet. The principal rivers are the Missouri, navigable throughout the State, and formed by the affluents Yellowstone, Little Missouri, Heart and Cannon Ball; the Mouse entering North Dakota from Canada and returning after a long circuit; the James river, the longest unnavigable river in the world; the Cheyenne; and the Red River of the North, forming the E. boundary. This river flows through a broad level plain, 50 to 60 miles wide and sufficiently elevated to be free from inundation, and containing some of the richest bottomland mould. The James river valley is one of the most noted artesian well districts in the world. There are numerous small lakes, but the only important one is Devil's Lake in the Turtle Mountains, an inland sea, with saline water and no visible outlet.

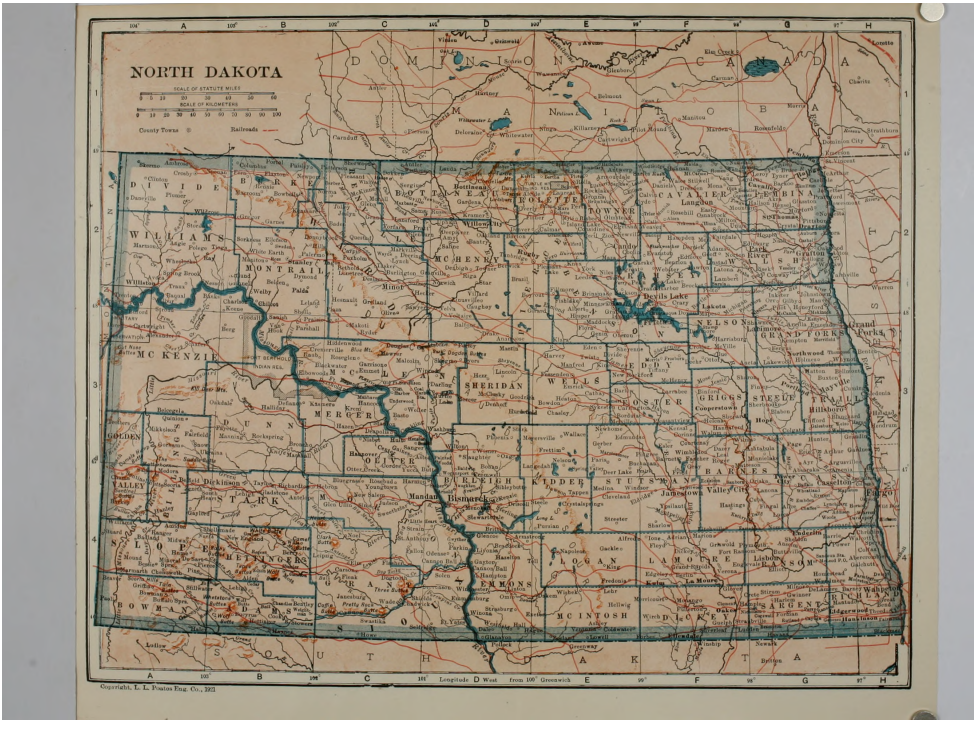
Geology.—The entire State has been inundated several times, the glacial drift being overlaid with lake mud. The entire Red river valley is the bed of an extensive lake, and railroad excavations have found lake shore lines, with sand and gravel beds. The W. portion of the State is underlaid with lignite, a brown coal, which burns readily and makes superior gas. Natural gas has been found, and brick and potter's clay are widely distributed. The Turtle Mountain region contains valuable building stone, and the Red river valley salt, limestone, hydraulic cement, and iron.

Soil and Agriculture.—The soil, especially in the Red river district, is exceedingly fertile, the clay subsoil being nearly as fertile as the topsoil, and both free from stones. The principal forest trees are oak, birch, aspen, cottonwood, ash, willow, box-elder, plum, and bullcherry.

The production and value of the leading crops in 1919 were as follows: corn, 16,764,000 bushels, valued at $23,470,000; oats, 38,400,000 bushels, valued at $25,728,000; barley, 14,950,000 bushels, valued at $16,146,000; wheat, 53,613,000 bushels, valued at $129,207,000; rye, 15,560,000 bushels, valued at $18,828,000; hay, 908,000 tons, valued at $12,803,000; potatoes, 5,607,000 bushels, valued at $9,072,000.

Manufacturers.—There were in 1914 609 manufacturing establishments in the State. The average number of wage earners was 3,275. The capital invested amounted to $14,213,000. Wages paid amounted to $2,416,000. The value of materials used was $14,482,000, and the value of products was $21,147,000. The principal articles of manufacture include flour and grist (70 mills), printing and publishing, masonry, saddlery and harness, packed meat, tobacco and cigars, railroad cars, carriages and wagons, millinery, clothing, dairy products, foundry and machine shop products, timber and lumber, furniture, fire brick, and hydraulic cement.

Banking.—On Oct. 31, 1919, there were reported 174 National banks in operation, having $6,515,000 in capital, $4,255,316 in outstanding circulation and $4,367,030 in United States bonds. There were also 706 State banks, with



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$11,515,000 in capital, $3,824,000 surplus, and $143,664,000 in resources.

Education.—There was a school population in 1918 of 200,532. The enrolment in the public schools was 162,572, with an average daily attendance of 114,542. There were 7,712 teachers receiving an average monthly salary of $45.70. For higher education there were Northwestern Normal College at Grand Forks, Fargo College at Fargo, University of North Dakota at Grand Forks, and the Wesley College at Grand Forks. The schools had an endowment of land valued at about $50,000,000.

Churches.—The strongest denominations in the State are the Roman Catholic; Lutheran, Independent Synods; Methodist Episcopal; Presbyterian; Regular Baptist; Congregational; and Lutheran, General Council.

Railroads.—The total railway mileage of main track line in 1919 was 1,445. There were about 360 miles of secondary main line and about 3,400 of branch lines. The roads having the longest mileage are the Northern Pacific, the Great Northern, and the Minneapolis, St. Paul and Sault Ste. Marie.

Finances.—The receipts for the year ending 1918 amounted to $7,571,519 and the disbursements to $7,688,133. There was a balance at the end of the year of $1,369,607. The State has a bonded indebtedness of $412,000.

Charities and Corrections.—The charitable and correctional institutions include a reform school at Mandan, a penitentiary at Bismarck, hospital for the insane at Jamestown, school for deaf at Devils Lake, institution for feebleminded at Grafton, school for the blind at Bath Gate, and tuberculosis institute at Dunseith.

State Government.—The governor is elected for a term of two years and receives a salary of $5,000 per annum. Legislative sessions are held biennially and are limited in length to 60 days each. There are 49 Senators and 113 Representatives. There are 3 representatives in Congress. In 1920 the State government was Republican.

History.—The first permanent white settlement was made in 1780 by a party of French Canadians, near Pembina. Fur trading posts were established early in the 19th century and Lewis and Clark spent the winter of 1804-1805 in the present town of Mandan. In 1810 Lord Selkirk built a fort at Pembina, supposing it to be British soil. The region was first opened to settlement by a treaty with the Dakota Indians in 1851. In 1861 the Territory of Dakota was organized with Yankton as capital, and including Idaho, Wyoming, and Montana. The territory was divided into North and South Dakota, and these admitted to the Union as States in 1889. In November of that year the State government was formed and the first legislature convened.

NORTH DAKOTA AGRICULTURAL COLLEGE, an institution for the promotion of scientific studies, especially agriculture, founded in 1890 at Agricultural College, North Dakota. It is almost entirely supported by appropriations from the State. It has faculties of home economics, engineering, veterinary medicine, pharmacy, and literature and science. The total enrolment in 1915 was 910. The endowment of the college consists of a land grant valued in 1919 at $3,500,000. The annual income is about $250,000. The library contains approximately 30,000 volumes.

NORTH DAKOTA, UNIVERSITY OF, a coeducational non-sectarian institution in Grand Forks, N. D., founded in 1883; reported at the close of 1919: Professors and instructors, 89; students, 1,088; volumes in the library, 64,500; endowment, $2,250,000; grounds and buildings valued at $1,105,000; income, $500,000; number of graduates, 1,525; president, Thomas Franklin Kane, Ph.D., LL.D.

NORTHEAST PASSAGE, a passage for ships along the N. coasts of Europe and Asia to the Pacific Ocean. The first to make the complete voyage by this passage was the Swedish explorer Nordenskjöld.

NORTHERN BAPTISTS, the name applied to members of the Baptist Church who hold their membership in the Northern branch. From 1813 to 1845 the missionary activities of the Baptist churches were carried on by "The General Convention of the Baptist Denomination in America," but in the latter year differences arose between the Northern and Southern Baptists about slavery which resulted in a division of the Baptist Church into the two branches. The Southern churches formed the "Southern Baptist Convention" which has continued to be their Missionary Society, while the Northern Baptists organized the "American Baptist Missionary Union." In 1907 the Northern Baptists merged their Home and Foreign Missionary organization into the "Northern Baptist Convention." In 1914 the communicants of the Northern branch of the Baptist Church numbered 1,238,323, the number of churches, 9,570, and 8,275 ministers. See BAPTISTS.

NORTHERN DRIFT, in geology, a name formerly given to boulder-clay of the Pleistocene period, when its materials were supposed to have been brought by polar currents from the N.

NORTHERN GIANT, a figurative designation sometimes applied to Russia.

NORTHERN PROVINCE, one of the five provinces into which Uganda in east Africa is divided, the others being Rudolf, Eastern, Western, and Buganda. There is gold and iron, and soil is fertile. Province comprises districts of Bunyoro, Gulu, Chua, West Nile.

NORTHERN TERRITORY, a territory of the Commonwealth of Australia, situated between Western Australia and Queensland on the west and east, and reaching from South Australia north to the Timor and Arafura seas. It has a total area of about 525,000 square miles. There are mountain ranges and the country is for the most part exceedingly dry, although portions are well adapted to cultivation of tropical products. Cattle and sheep raising are the chief industries. The total population in 1912 was estimated at about 3,000.

NORTHFIELD CONFERENCES and SUMMER SCHOOLS, an annual series of meetings for Christian workers in the Evangelical Protestant Churches, established in 1882 by the famous evangelist Dwight L. Moody. The Student Conference met at East Northfield in 1886 and has held its sessions there ever since. It is a meeting designed primarily to interest students in Christian work. The Mount Hermon School for Bible study also has its sessions during the summer at Northfield. Other summer conferences are: the Home Mission School, the Young Women's Conference, the Sunday School Workers' Conference, and the Foreign Missionary School. Since Moody's death the work has been in charge of his sons.

NORTH LITTLE ROCK. See ARGENTA.

NORTHMEN, a name applied to the ancient inhabitants of Scandinavia, or Norway, Sweden, and Denmark, but more generally restricted to those sea-rovers called Danes by the Saxons, who sailed on piratical expeditions to all parts of the European seas, made their first appearance on the coast of England in 787, and from the year 832 repeated their invasions, till they became masters of all the country under their King Canute, and reigned in England during the next 50 years, down to 1042, when the Saxon dynasty was restored in the person of Edward the Confessor. A Danish invasion penetrated to the Meuse in 515, but was repelled. The victories of Charlemagne over the Saxons led to a league being formed between that people and the Danes; and Gottfried, King of Jutland, with his piratical bands, ravaged the French and Spanish coasts, even as far as the Straits of Gibraltar. Their great invasion of France took place in 841, after which the whole coast of W. Europe, from the Elbe to the Guadalquivir fell a prey to the Northmen. In 837 they had sacked Utrecht and Antwerp, and fortified themselves on the island of Walcheren. Flanders was obstinately defended; but Friesland, Lower Lorraine, and Neustria fell without resistance, Roland devastated Holland, and appeared on the Seine, while Gottfried ravaged the valleys of the Meuse and Scheldt. Hastings, at the head of a band of Northmen, sacked Bordeaux, Lisbon, and Seville, defeated the Moorish conquerors of Spain at Cordova, overran Italy and Sicily, and crossed the straits into Morocco.

In 885 they laid siege to Paris, but were bought off by Charles the Fat. Rollo, after ravaging Friesland and the countries watered by the Scheldt, accepted the hand of a daughter of Charles the Simple, and received with her possession of all the land in the valley of the Seine, from the Epte and Eure to the sea, which then went by the name of Normandy. Their conquest of England, in 1066, gave that country an energetic race of kings and nobles. Though the Normans had acquired comparatively settled habits in France in the course of the 11th century many nobles, with their followers, betook themselves to S. Italy and engaged in strife with native princes, Greeks and Arabs. In 1059, Robert Guiscard, one of the 10 sons of the Norman count, Tancred de Hauteville, was recognized by Pope Nicholas II. as Duke of Apulia and Calabria, and in 1071 as lord of all lower Italy. His brother Roger conquered Sicily, 1060-1089. Roger II. of Sicily united the two dominions in 1127; but in the person of his grandson, William II., the Norman dynasty became extinct, and the kingdom passed to the Hohenstauffen family.

NORTH PLAINFIELD, a borough of New Jersey, in Somerset co. It is on the Central Railroad of New Jersey. Its industries include fruit canneries, a woodworking factory, a telescope factory, etc. In the neighborhood are important stone quarries. It is the seat of Mount St. Mary's College and Herbert's Hall for

Exceptional Children. Pop. (1910) 6,117; (1920) 6,916.

NORTH PLATTE, a town of Nebraska, in Lincoln co. It is at the junction of the North and South Platte rivers, and it is on the Union Pacific railroad. Its industries include railroad machine shops, a cold-storage plant, flour mills, grain elevators, etc. It is the center of an important agricultural and cattle-growing region. Its public buildings include a United States land office, Federal district court, State experimental station, and a public library. Pop. (1910) 4,793; (1920) 10,466.

NORTH POLAR EXPEDITIONS. See ARCTIC AND ANTARCTIC EXPLORATIONS.

NORTH PROVIDENCE, a town of Rhode Island, the county-seat of Providence co., 5 miles from Providence on the New York, New Haven and Hartford railroad. It has important manufactories of woolen goods. It contains a public library. Pop. (1910) 5,407; (1920) 7,697.

NORTH SEA, or **GERMAN OCEAN**, that portion of the Atlantic Ocean extending from the Straits of Dover to the Shetland Islands, bounded on the E. by Norway and Denmark; on the S. by Hanover, the Netherlands, Belgium, and France, and on the W. by the British Islands; length 700 miles, breadth 420 miles. It communicates with the Atlantic by the Straits of Dover and Pentland Firth, and with the Baltic by the Skagerrack, the Cattegat, the Sound, and the Great and Little Belts. It receives the waters of the Elbe, Rhine, Weser, and Scheldt, on the E., and the Thames, Ouse, Humber, Tyne, Tweed, Forth, and Tay on the W. Navigation is very difficult and dangerous, owing to the sand banks along the English coasts, and extending N. E. from the Firth of Forth, and one N. W. from the mouth of the Elbe, besides the variety of currents, which generally show a tendency toward the N. E., owing to the prevalence of the S. W. winds. The influence of tidal currents of the Atlantic is felt in the North Sea so as to cause a rise of 20 feet in the estuary of the Humber. The fisheries of the North Sea are important, and employ many thousands of people. The North Sea was a principal zone of naval authority during the World War. German submarines infested it, and did great damage until a great barrage of mines, laid by American naval vessels, closed it for navigation.

NORTH STAR, the star *α* of the constellation Ursa Minor. It is close to the true pole, never sets, and is therefore of great importance to navigators in the Northern Hemisphere.

NORTH STAR, ORDER OF, a Swedish order of knighthood, established in 1748 mainly as a recognition of important scientific services.

NORTH TARRYTOWN, a village in New York in Westchester co., 26 miles N. of New York City on the Hudson river and on the New York Central railroad. It has important manufactories of automobiles and other products. The town is an attractive residential community. Pop. (1910) 5,421; (1920) 5,927.

NORTH TONAWANDA, a city of New York in Niagara co., 5 miles N. of Buffalo. It is situated on the Niagara river, Erie canal, and the Erie, the Wabash, the West Shore, the Lehigh Valley, and the New York Central railroads. It has important industrial interests, chiefly of lumber and iron. There are manufactories also of steam piping, steam radiators, and motor boats. There is a library and other public buildings. Pop. (1910) 11,955; (1920) 15,482.

NORTHUMBERLAND, a county of England, situated in the northern extremity. It is for the most part a hilly county. The coast region and the valleys produce barley, wheat, and vegetables. The western part is largely given up to pasturage. There are important mines of coal, lead, and zinc, and there are manufactories of iron, glass, chemicals, and pottery. The county has important salmon fisheries. Pop. about 700,000.

NORTHUMBRIA, the extreme N. of the ancient English kingdom, stretching from the Humber N. to the Firth of Forth, and separated W. from Cumbria and Strathclyde by the Pennine range and the Ettrick Forest. Bernicia, the district N. of the Tees, had for its first king Ida (547-559), who built Bamburgh as his capital. His grandson, Ethelfrith, mounted the throne in 593, married the daughter of Ella, who in 560 had formed the kingdom of Deira out of the district between the Tees and the Humber, set aside the rights of his boy brother-in-law Edwin, and so united both Bernicia and Deira into one kingdom. But Edwin returning, defeated and killed the usurper in 617, and became King of the Northumbrians as well as Bretwalda. Under him Northumbria was Christianized. In 633 he fell in battle against Penda of Mercia and the Welsh Cadwallon, but a year later St. Oswald, son of Ethelfrith, cleared the country, and united both divisions under his rule. His brother and

successor, Oswy, yielded Deira to Oswin, son of Osric, his cousin, but in 654, by a great victory in which Penda perished, was able to unite his kingdom, and reigned till 670. Under Egfried (670-685), Aldfrid (685-705), and as many as 14 obscure successors, Northumbrian influence gave way before the rise of Mercia, internal tumults, and Danish ravages, till 806, when the chronicles cease, and 827, when at length Northumbria became tributary to Egbert.

NORTHWESTERN COLLEGE, a coeducational institution in Naperville, Ill.; founded in 1861 under the auspices of the Evangelical Church; reported at the close of 1919: 27 members of the faculty, and 392 students. President, E. E. Hall, Ph. D.

NORTHWESTERN PROVINCES, a lieutenant-governorship of British India, constituted under an Act of 1835, and occupying the upper basin of the Ganges and Jumna, extending from Bengal to the Punjab; area, 107,503 square miles; pop. about 50,000,000. Oudh, till 1877, a separate government, is now under the lieutenant-governor of the Northwestern Provinces. The province which constitutes the great part of Hindustan proper, is mainly a great alluvial plain, sloping from the Himalayas, and comprises the Doab, Rohilkhand, Bundelkhand, etc., and the Upper Ganges valley. It is the great wheat country of India. The headquarters of Hinduism, and containing some of the most sacred memorials of the Aryan race, it was nevertheless long subject to Moslem sway. The divisions of the Northwestern Provinces are Meerut, Agra, Rohilkhand, Allahabad, Benares, Jhansi, Kumaon, and the four divisions of Oudh—Lucknow, Sitapur, Fyabad, Rai Bareli.

NORTHWESTERN UNIVERSITY, a coeducational institution in Evanston and Chicago, Ill., founded in 1851, under the auspices of the Methodist Episcopal Church, reported at the close of 1919: Professors and instructors, 501; students, 4,750; president, T. F. Holgate.

NORTHWEST FRONTIER PROVINCE, a province of British India. Afghanistan bounds it on the W. and N., Kashmir and the Punjab on the E., and Baluchistan on the S. It has an area of 13,418 square miles, and the population is about 2,000,000. The capital is Peshawar.

NORTHWEST PASSAGE, a passage for ships from the Atlantic Ocean into the Pacific by the N. coasts of the American continent, long sought for, and at last discovered in 1850-1851 by Sir R. MacClure. See NORTH POLAR EXPEDITIONS.

NORTHWEST TERRITORY, a name now given to British North American territory N. W. of the St. Lawrence river watershed which includes the old provincial districts of Mackenzie, Franklin, and Keewatin, north of Alberta, Saskatchewan, and Manitoba, and extending to Arctic Ocean, its islands and as far as land has been discovered. Area about 1,242,224 square miles. The population, which is steadily declining, is estimated (1918): Indians, 5,100; Eskimos, 2,600, and some hundreds of half-breeds. There are two principal lakes, Great Bear, 11,800 square miles, and Slave Lake, 11,700. The Mackenzie river is 2,525 miles long. The region in parts abounds in fur-bearing animals—moose, bear, and caribou—and the waters teem with fish. Vegetables and oats are raised in the Mackenzie river valley. The territory is under a Commissioner of the Royal North West Police. Government-seat, Ottawa. Formerly included in Northwest Territory were the present provinces of Alberta (area, 255,285 square miles, pop. 375,000); Manitoba (area, 251,832 square miles, pop. 455,614); Saskatchewan (area, 251,700 square miles, pop. 492,432); and Yukon (area, 34,298 square miles, pop. 8,512).

NORTHWICH, a city of England in the district of Cheshire. Its chief industry is the mining of salt. It has several important public buildings. Its manufactures include bricks, chemicals, leather, brass, and iron. Pop. about 18,000.

NORTH YAKIMA, now Yakima, a city of Washington, county-seat of Yakima co. It is 157 miles S. E. of Seattle on the Northern Pacific, the Oregon-Washington Railroad Navigation Company, and the Yakima Valley Traction railroads. It is the center of a productive fruit region and also important livestock and dairying interests. It contains a hospital, a library and other public buildings. Pop. (1910) 14,082; (1920) 18,539.

NORTON, CHARLES ELIOT, an American educator; born in Cambridge, Mass., Nov. 16, 1827; was graduated at Harvard in 1846. Dr. Norton was well known as a Dante scholar, and an authority on art. He was Professor of the History of Art at Harvard in 1874-1898. He is author of "Historical Studies of Church Building in the Middle Ages"; "Notes of Travel and Study in Italy"; "Considerations of Some Recent Social



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Theories"; and editor of "Letters of James Russell Lowell"; "Letters of Thomas Carlyle"; etc. He died Oct. 21, 1908.

NORTON SOUND, an arm of the Bering Sea on the west coast of Alaska, south of Cape Prince of Wales. At its entrance it is 175 miles wide, and extends about 135 miles into Alaska. The Yukon river empties into it. It was discovered in 1778 by Captain Cook.

NORWALK, a town in Fairfield co., Conn.; on the Norwalk river, and on the New York, New Haven, and Hartford railroad; 60 miles S. W. of Hartford. Here are Norfolk and South Norwalk Public Libraries, high schools, Carnegie Library, Norwalk Hospital, State Armory, electric lights, electric street railroads, waterworks, National and savings banks, and several daily and weekly newspapers. The town has manufactures of paper boxes, stoves, earthenware, machinery, builders' hardware, air compressors, locks, cigars, elastic webbing, woolen goods, corsets, shirts, shoes, straw and fur hats, etc. It also has a large coast trade, and an extensive oyster industry. Pop. (1910) 24,211; (1920) 27,743.

NORWALK, a town and county-seat of Huron co., O.; on the Lake Shore and Michigan Southern, the Lake Shore Electric, and the Wheeling and Lake Erie railroads; 56 miles W. S. W. of Cleveland. It has a public library, waterworks, electric street railroad, National banks, several daily and weekly newspapers, and manufactories of pianos, shoes, plows, sewing machines, automobile accessories, tobacco, besides railroad machine shops. Pop. (1910) 7,852; (1920) 7,379.

NORWAY (Norwegian, Norge), a country in the N. of Europe, bounded on the N. E. by Russian Lapland, and E. by Sweden, and washed on all other sides by the sea; by the Arctic Ocean on the N., the Atlantic and the North Sea on the N. W. and W., and the Skager-rack on the S. It is about 1,080 miles in length, and its greatest breadth is about 275 miles, but toward the N. narrows so much as to be in some places not more than 20 miles; area, 124,130 square miles; pop. (1910) 2,391,782; (1918, est.) 2,632,010.

Topography. — The coast consists chiefly of bold precipitous cliffs, and is remarkable both for the innumerable islands by which it is lined, and the bays or fiords which cut deeply into it in all directions. The surface is very mountainous, particularly in the W. and N. Very commonly the mountain masses assume the form of great plateaux or table-lands, called fjelds or fields, as the Dovre Fjeld, Hardanger Fjeld, etc. The highest summits belong to the Sogne Fjeld, a congeries of elevated masses, glaciers, and snow fields in the center of the S. division of the kingdom, where rise Galdhoepig (8,400 feet), the Glitretind (8,384), and Skagastölstind (7,879). The few important rivers that Norway can claim as exclusively her own have a S. direction, and discharge themselves into the Skager-rack; of these the chief are the Glommen (400 miles), and its affluent the Lougen. The most important river in the N. is the Tana, which forms part of the boundary between Russia and Norway, and falls into the Arctic Ocean. The prevailing rocks of Norway are gneiss and mica-slate, of which all the loftier mountains are composed. The most important metals are iron, copper, silver, and cobalt, all of which are worked to a limited extent.

Climate.—The climate of Norway is on the whole severe. The harbors on the W., however, are never blocked up with ice; but in places more inland, though much farther S., as at Christiania, this regularly happens.

Industries.—The farms are generally the property of those who cultivate them, and commonly include a large stretch of mountain pasture, often 40 or 50 miles from the main farm, to which the cattle are sent for several months in summer. The rearing of cattle is an extensive and profitable branch of rural economy. There were in Norway in 1917 246,634 farms. Live stock is an important industry. The chief sources of wealth are forests and fisheries. There are nearly 100,000 persons engaged in cod fisheries, and about 30,000 in other fisheries. The total value of fisheries in 1918 amounted to 85,292,024 kroner. There are valuable deposits of iron ore, but the lack of coal prevents smelting. Silver, copper ore, and nickel also exist. Power for manufacturing is furnished chiefly by water. In 1917 there were 6,886 manufacturing establishments, employing 161,772 persons. In 1916 the total value of imports was 1,353,664,900 kroner, and of the exports 988,333,000 kroner. The chief imports were carriages and machinery, unworked metals and bread stuffs. The chief exports were animal products, timber, and wooden goods.

Manufactures include cotton, woolen, flax, and silk tissues. Distilleries, brick works, saw and flour mills, are numerous; and there are foundries, machine works, lucifer-match works, tobacco factories, and sugar refineries. Norway is

one of the leading shipping nations and during the war it became one of the chief carrying countries. A number of vessels belonging to Norwegian citizens were destroyed during the war by submarines. In 1919 the merchant marine consisted of 1,759 steamers with a tonnage of 1,504,432. There were also nearly 600 sailing vessels and nearly 1,200 motor vessels, a total of 3,500 vessels of all kinds.

Finance.—The revenue for 1918-1919 was 624,891,900 kroner, and the expenditures 624,891,900 kroner. The national debt in 1917 was 455,504,598 kroner.

History.—In the earliest times Norway was divided among petty kings or chiefs (jarls), and its people were notorious for their piratical habits (see NORTHMEN). Harold Fair Hair (who ruled from 863 to 933) succeeded in bringing the whole country under his sway, and was succeeded by his son Erick. He was ultimately driven from the throne, which was seized in 938 by his brother, Hako I., who had embraced Christianity in England. Magnus the Good, the son of St. Olaf and Alfhild, an English lady of noble birth, was called to the throne in 1036; and having in 1042 succeeded also to the throne of Denmark, united both under one monarchy (see DENMARK). After his death the crowns of Norway and Denmark again passed to different individuals. In 1319 the crowns of Norway and Sweden became for a short time united in the person of Magnus II. Erick of Pomerania succeeded, by separate titles, to Norway, Sweden, and Denmark; and in 1397 was crowned king of the three kingdoms. Sweden then for a time became a separate kingdom; but the union between Denmark and Norway was drawn closer and closer, and very much to the disadvantage of the latter, which was ultimately degraded into a mere dependency of the former. The subsequent history of Norway becomes for a long period merely a part of that of Denmark. After the defeat of Napoleon by the allies in 1813 it was arranged by the treaty of Vienna in 1814 that Denmark must cede Norway to Sweden, and the result was the union of the two countries under the Swedish crown. A grave constitutional struggle at length arose between the two countries, from the demand for greater independence for Norway in her foreign policy, which was energetically backed by the Liberals. On the plea that King Oscar refused to permit the establishment of a separate Norwegian consulate system, which was a fact, the Storthing on June 7, 1905, passed a resolution dissolving the union with Sweden. The Swedish political party in power then required that this resolution be referred to the Norwegian people as a plebiscite matter or a referendum, seeing it had been before only determined by the Storthing or parliament. This was done and on Aug. 13, 1905, the vote proved to be 368,200 in favor of dissolution, and 184 against that movement, being one of the most remarkable popular expressions ever formulated. Prince Charles of Denmark was proffered the now vacant Norwegian throne and was crowned Nov. 18, 1905, as Haakon VII., the first exclusively Norwegian king since 1380. King Haakon VII. is second son of the king of Denmark, and grandson of Christian IX., who died in 1906. He was born in 1872 and married the British princess Maud. Members of the Storthing are elected every three years by voters who have themselves been elected by the citizens. It has two chambers, the Odelsthing, containing three-fourths of the members, and the Lagthing, one-fourth. The great body of the people are Protestants of the Lutheran confession, which is the state religion. Other sects are tolerated, though government offices are open only to members of the Established Church. Elementary education is free and compulsory. Besides primary schools there are numerous secondary schools. There is but one university, that of Christiania. The people are almost entirely of Scandinavian origin. A small number of Lapps (called in Norway Finns) and Qvaens, reckoned at 20,000 in all, live in the N. The chief ports are Bergen, Christiania, and Trondhjem; the capital is Christiania. Norway suffered probably as little as any of the neutral nations during the World War. The sentiment from the beginning was strongly against Germany and this continued to the end. The heavy losses suffered as a result of the submarine war were probably greatly offset by the increased commercial activity.

The United States during the war chartered or requisitioned a large number of Norwegian ships. There was some friction in regard to delay in payment for these, but in 1919 an agreement was reached by which the United States was to pay $11,000,000, representing the actual value of the ships, with additional compensation later.

For six years following 1913, the government of Norway was in the hands of the so-called Knudsen Cabinet, which was somewhat radical in its policies. This Cabinet finally resigned on Feb. 5, 1919, and another Cabinet was formed by the prime minister Knudsen.

NORWAY, a city of Michigan in Dickinson co., 9 miles S. E. of Iron Mountain. It is on the Chicago and Northwestern and Wisconsin and Michigan railroads. It has important iron mines.

NORWAY SPRUCE, a tree of the genus *Abies*, *A. excelsa*, which abounds in Norway: It is largely used for building purposes.

NORWICH, a city of England, capital of the country of Norfolk, on the river Wensum. It is 5 miles in circumference, and is skirted on the N. and E. by the river. Prominent among the public buildings are the castle, built about the 10th century and the cathedral in the Norman style. Its manufactures include bandanas, bombazines, shawls, crapes, gauzes, damasks, camelets, muslins, silk, and cotton fabrics, and shoes; also iron and brass foundries, oil, corn and mustard mills, etc. Pop. (1917) 108,877.

NORWICH, a city and one of the county-seats of New London co., Conn.; on the Thames river, and on the Central Vermont and the New York, New Haven and Hartford railroads; 13 miles N. of New London. It comprises the villages of Greeneville, Yantic, Norwich Town, Fair Ground, Norwich, and Taftville. Here are a Free Academy, the Otis Free Academy, a public hospital, libraries, electric street railroads, gas and electric lights, National banks, and several daily and weekly newspapers. It has manufactures of firearms, locks, cotton and woolen fabrics, printing presses, bicycle chains, type, silk ribbons, electrical supplies, leather belting, machinery, rolled and cast iron, harness, stoves, furnaces, nickel-plated goods, hosiery, etc. Pop. (1910) 20,367; (1920) 29,685.

NORWICH, a town and county-seat of Chenango co., N. Y.; on the Chenango river, the Chenango canal, the Lackawanna, and the New York, Ontario and Western railroads; 41 miles N. N. E. of Binghamton. It contains a stone court house, circulating libraries, National banks, and several weekly newspapers, and has manufactures of pianos, blast-furnaces, knitting goods, hammers, carriages, drugs and medicines, silk goods, chairs, machinery, etc. Pop. (1910) 7,422; (1920) 8,268.

NORWICH UNIVERSITY, an institution established in 1819 for the purpose of fitting college men, who are training for a purely civil career, for effective service as volunteers in time of war. It is now the military college of the State of Vermont. Originally the institution was settled in Middletown, Conn., and then later, in 1829, at Norwich where it received its present name. It removed to its present location at Northfield, Vt., in 1898. The college has an enrolment of 200 students and its graduates have an enviable record in war and peace time pursuits. Among the graduates was Admiral Dewey, the victor of Manila Bay.

NORWOOD, a town in Massachusetts in Norfolk co., 14 miles S. W. of Boston. It is on the New York, New Haven and Hartford railroad. It is an important industrial center and has canneries, iron foundries, and manufactories of leather goods, ink, and glue. There are also several important printing shops and book-binderies. It has a hospital, a Memorial Library and other important public buildings. Pop. (1910) 8,014; (1920), 12,627.

NORWOOD, a city of Ohio in Hamilton co. It adjoins Cincinnati on the N. E. and is situated on the Baltimore and Ohio Southwestern, and the Cincinnati, Lebanon, and Northern railroads. It is a residential suburb of Cincinnati. It has a library, city hall, and other important public buildings. The chief manufactures are of playing-cards, bookcases, pianos, washing machines, iron working machines, etc. Pop. (1910) 16,185; (1920) 24,966.

NOSE, the organ of smell, consisting of two parts, one external, the nose, the other internal, the nasal fossæ. The sense of smell is produced by the action of the olfactory nerve on the meatuses of the nasal fossæ.

NOSTRADAMUS, MICHEL, a French astrologer; born in St. Remy, Provence, France, Dec. 14, 1503. After graduating in medicine at Montpelier, in 1529, he acquired the reputation of a skillful physician by successfully arresting the progress of a pestilential disease. But he aimed at the character of an astrologer and adept in the occult sciences, and published a volume of obscure metrical rhapsodies in 1555, under the title of "Prophetical Centuries." Nostradamus was appointed first physician to Charles IX., who came himself in person to Salon, where Nostradamus then resided, for the purpose of visiting him. He died in Salon, France, July 2, 1566.

NOTARY, a public official authorized to attest signatures in deeds, contracts, affidavits, and declarations. They protest bills of exchange and notes, draw

up protests after receiving affidavits of mariners and masters of ships, and administer oaths. Also called a notary public.

Originally, among the ancient Romans, a person employed to take notes of trials, proceedings in courts, contracts, etc., a shorthand writer. This kind of work was at first usually performed by slaves, but the notarii, as they increased in ability and raised themselves above the servile ranks, gradually assumed the duties and functions of the tabelliones, writers who, under the Roman law, were employed in drawing up contracts, wills, and commercial documents.

NOTATION, a marking. In architecture it is a system of signs, marks, or characters appended to figures, when used to denote dimensions on drawings, as ′ for feet, ″ for inches, ‴ for parts; as 10′ 6″ = 10 feet, 6 inches. In arithmetic it is a system of figures or characters used to represent numbers. Two methods of so doing are at present in use, the Roman and the Arabic.

In the Roman method seven characters are employed called numeral letters. These standing separately represent the following numbers: I. for 1, V. for 5, X. for 10, L. for 50, C. for 100, D. for 500, M. for 1,000. When a letter stands alone, it represents the number given above, as V. for 5; when a letter is repeated the combination stands for the product of the number denoted by the letter by the number of times which it is taken: thus, III. stands for 3, XXX. for 30, etc.; when a letter precedes another, taken in the order given above, the combination stands for the number denoted by the greater diminished by that denoted by the less: thus, IV. stands for 5 less 1, *i. e.*, 4; XC. for 100 less 10, *i. e.*, 90, etc.; when a letter, taken in the order given above, follows another, the combination stands for the sum of the numbers denoted by the letters taken separately; thus, XI. stands for 10 plus 1, etc.

In the Arabic, or rather the Hindu, method, introduced by the Arabs into Europe at the close of the 10th century, numbers are represented by the symbols, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, and their combinations according to conventional rules. The characters are called figures or digits and taken in their order, stand for naught, one, two, three, four, five, six, seven, eight, nine; the value of the unit depends on the place which the figure occupies in the scale adopted. The value of each figure or digit increases in a tenfold ratio from the right to the left.

Notation in chemistry is the written language of that science. The system now in use belongs exclusively to modern times, but in all ages signs of some kind or other seem to have been employed to represent the various kinds of matter. In 1815 Berzelius proposed using the initial letter of the element and of coefficients for the number of like atoms in a compound, as sulphate of soda=NA, SO_4. In organic compounds, the constitution of which is known, the symbols are so arranged as to show the various groups of radicals $\begin{matrix}CH_3\\CO\,(C_2H_5)\,O\end{matrix}$ =ethylic acetate, but butyric acid, with the same number of atoms, is expressed by $\begin{matrix}CH_3(CH_2)_2.\\COHO\end{matrix}$

In mathematics, the conventional method of representing mathematical quantities and operations by means of symbols.

In music, the system or method of expressing musical sounds in writing, by means of signs, characters, figures, or marks.

NOTO, a city of Sicily. It has a number of beautiful churches and palaces. It contains a library and museum. There is a considerable trade in corn, oil, and wine. Pop. about 33,000.

NOTRE DAME, a title of the Virgin Mary, and the name of many churches in France, and particularly of the great cathedral at Paris, which was founded in the 12th century. The corner stone of Notre Dame de Paris was laid in 1163 by Pope Alexander III., but the building was not finally completed for 100 years. In 1845 the church was thoroughly restored, and the edifice became one of the most imposing in all ecclesiastical architecture. The interior is 132 yards long, 53 yards wide, 37 yards high, and contains 37 chapels. The great bell in the S. tower which weighs about 30,000 pounds, was cast in 1686; and the stained glass of the three famous rose windows dates from the 13th century.

NOTRE DAME, UNIVERSITY OF, an educational institution in Notre Dame, Ind.; founded in 1842 under the auspices of the Roman Catholic Church; reported at the close of 1919: Professors and instructors, 128; students, 1,200; president, Rev. John Cavanaugh, D. D.

NOTTINGHAM, a town near the middle of England, capital of the county of same name, on the Leen, near its junction with the Trent, 110 miles N. W. of London. It occupies a pic-

turesque site overlooking the Vale of Trent, and has one of the finest and largest market places in the kingdom. The castle, which crowns the summit of a rock, rising 133 feet above the level of the Leen, was originally built by William the Conqueror as a means of overawing the outlaws frequenting the recesses of Sherwood Forest. The principal educational and literary institutions are the University College and Technical School, the school of art, the People's Hall, and the Mechanics' Institute. An arboretum covering 18 acres is a feature of the town. The staple manufactures are hosiery and lace, the latter being a sort of specialty. There are also manufactures of cotton, woolen, and silk goods, and of articles in malleable and cast iron. Nottingham was a place of importance in Anglo-Saxon times, and was twice or thrice taken by the Danes. Charles I. raised his standard here in 1642, and next year the town and castle were taken by the Parliamentarians. Serious riots, occasioned by the introduction of machinery, took place in 1811-1812 and 1816-1817. Pop. (1917) 236,853.

NOTTINGHAM, HENEAGE FINCH, 1ST EARL OF, an English statesman; born in Eastwell, England, Dec. 23, 1621. He was an ardent royalist, was called to the bar in 1645, and at the Restoration was appointed solicitor-general, in which capacity he signalized his zeal in the prosecution of the regicides. In 1661 he was elected member for the University of Oxford and obtained a baronetcy, and six years afterward took a prominent part in the impeachment of the Earl of Clarendon. In 1670 he became attorney-general, and in 1675 he obtained the chancellorship. In 1681 his services were rewarded with the earldom of Nottingham. He died Dec. 18, 1682.

NOUE, FRANÇOIS DE LA, called BRAS DE FER (Iron Arm), a French Huguenot commander; born near Nantes, France, in 1531. His "Political and Military Discourses" (1587) are deemed masterpieces. He was killed at Lamballe, France, in 1591.

NOUREDDIN, MALEK-AL-ADEL NOUR-ED-DEEN MAHMOUD, Sultan of Syria and Egypt; born in Damascus, Turkey, Feb. 21, 1116. He succeeded his father in 1145, and continued the war with the Christians; his success in which, and especially his complete conquest of Edessa, gave occasion to the second crusade, preached by St. Bernard, and led by Louis VII. and the Emperor Conrad III. Noureddin compelled the crusaders to raise the siege of Damascus, and in 1149 they retired. The Sultan immediately attacked and defeated Raïmond, prince of Antioch, who fell in the battle. The next year he unsuccessfully besieged Tell-basher, a dependency of Edessa held by Josceline de Courtenay; but he soon after captured Josceline, and made himself master of Edessa. In 1154 he added Damascus to his dominions, and made the city his capital. The war continued, and in 1159, Noureddin was defeated by the Christians near the lake of Gennesareth, and was menaced by the Greek Emperor Manuel Comnenus. By giving up to Manuel all the Christian captives, 6,000 in number, he induced him to relinquish his enterprise. And soon after one of his generals defeated and made prisoner the famous Renaud de Chatillon. Noureddin being called in to support one of the rival claimants to the caliphate of Egypt, effected the conquest of it, and made it his own. He died at Damascus, May 15, 1174.

NOVAËS, GUIOMAR, Brazilian pianist, born in 1896. She studied with Chiafarelli and made her public debut at the age of ten, giving such evidence of ability that she was given a subsidy by the government. Went to Paris, 1907, and won first place among 388 candidates for 12 available places in the Conservatoire. She there studied with Isidore Philipp four years, winning first prize. Has appeared with success in Paris, London, Germany, Italy and United States. Toured United States 1917-1920.

NOVALIS, pseudonym of FREDERICK VON HARDENBERG, a German writer; born in Wiederstädt, Prussia, May 2, 1772. Educated at University of Jena and Leipsic. About the year 1797 he published his "Hymns to Night"; and between that time and the year 1801, produced a number of works displaying a boundless imagination and a love of the mystical and supernatural. In 1800 he published the romance "Henry of Ofterdingen." A complete collection of his writings was made by his friends Tieck and Frederick Schlegel. He died in Weissenfels, Prussia, March 25, 1801.

NOVARA, capital of an Italian province; 60 miles N. of Turin; with several fine churches, a trade in silk, grain, and wine, and manufactures of silk, cotton, and linen. Here the Sardinians were utterly defeated by the

Austrians under Radetzky, March 23, 1849. Pop. about 60,000.

NOVA SCOTIA, a province of the Dominion of Canada, comprising the peninsula of Nova Scotia proper and the island of Cape Breton. It is bounded N. and N. W. by the Bay of Fundy, a small section of New Brunswick, the Strait of Northumberland, and the Gulf of St. Lawrence, and on the E. and S. by the Atlantic. The main peninsula is separated from Cape Breton by the narrow channel of the "Gut" of Canso. Its extreme length is 350 miles, and its breadth from 50 to 100 miles. The area is 20,600 square miles—a little smaller than West Virginia. The coast is indented with numerous inlets, that form a great number of good harbors. Exclusive of these, the coast-line is about 1,000 miles long. There are many rivers, most of them short, and navigable in their lower courses for a few miles. The principal of these are the Avon, Annapolis, Shubenacadie, Lahave, Musquodoboit, and St. Mary's. Along the Atlantic seaboard, and reaching inland about 20 miles, is a range of hills. The Cobequid Mountains extend from the Gut of Canso to the Bay of Fundy, through the middle of the main peninsula. The soil is generally fertile. The climate is temperate and equable, the mean temperature about 42° F. The summer average is 61°, the winter 23°. Though there is much sea fog, the climate is generally healthful.

Agriculture is the principal industry. The wheat production in 1919 was 605,610 bushels; oats, 5,633,078 bushels; barley, 312,096 bushels. Other important industries are fishing, lumbering, and mining. The fisheries employ about 30,000 persons. The forests of Nova Scotia are large and valuable. The value of mineral products for 1919 was: coal $2,500,000; iron and steel $19,000,000; coke $5,771,000. Ship building is extensively carried on, and manufacturing industries are rapidly increasing. There are five universities, and an excellent system of common schools. There are about 1,500 miles of railway in the Province. The religious bodies include all the principal Protestant sects, and the Roman Catholic Church, which has two dioceses. Nova Scotia has an Anglican bishop jointly with Prince Edward Island. There is a provincial legislature in two houses. The executive is a lieutenant-governor, appointed by the Governor-general of Canada. He has a council of 21 members.

Nova Scotia is supposed to have been first visited and discovered by the Cabots in 1497. Its first settlers were French, who located themselves here in 1604, but were expelled by settlers from Virginia, who claimed the country by right of discovery. The French called the country Acadia. It was ceded to Great Britain in 1763, and joined to Canada in 1867. It receives a subsidy from Canada toward the support of the provincial government. Imports (1919) $27,863,220; exports, $61,601,000. The chief cities are Halifax, Yarmouth, Truro, and Spring Hill. Pop. of the Province (1919) 492,338.

NOVA ZEMBLA, two large islands in the Arctic Ocean, belonging to Russia, and lying N. from the N. E. corner of European Russia, separated by the narrow strait Matotchkin Shar; length, 635 miles; breadth, 170 miles. The coasts swarm with seals, fish, and water-fowl. The interior is frequented by reindeer, white bears, ermines, and Arctic foxes. It has no permanent inhabitants.

NOVEL, a prose narrative of fictitious events connected by a plot, and involving portraitures of character and descriptions of scenery. Is generally applied to narratives of everyday life and manners; while the romance deals with what is ideal, marvelous, mysterious, or supernatural. Prose fiction written for entertainment is of considerable antiquity. Among the Greeks we find mention of a collection of stories known as the "Milesian Tales," before which a sort of historical romance, the "Cyropædia," had been produced by Xenophon (430-357 B. C.). There were several other Greek writers of fiction before the Christian era, but the most notable name is that of Heliodorus in the 4th century after Christ. He was followed by Achilles Tatius and by Longus. Among the Romans the chief names are Petronius Arbiter and Apuleius.

The romances of the Middle Ages were metrical in form. The true novel, as understood to-day, had its beginnings in the stories of Boccaccio's "Decameron" (1358). The success of this collection gave rise to numberless imitations, and since that time the development of the novel has been steadily progressive. At first we have nothing but tales of love intrigue, as in the "Decameron," in the "Hundred New Tales" (15th century), and the "Heptameron" of Margaret of Navarre (1559). But during the 16th and 17th centuries there is very marked progress, and we now find produced the comic romance, the *picaresque* romance or romance of amusing roguery, and the

pastoral romance. The first variety is worthily represented by the "Gargantua" and "Pantagruel" of Rabelais (died 1553). Next in point of date comes the "Life of Bertoldo" of Julio Cesare Croce, a narrative of the humorous and successful exploits of a clever peasant. Some years after appeared the "Don Quixote" of Cervantes (1605), which gave the death-blow to the romance of chivalry. About the same time the first of the *picaresque* romances appeared in Spain. Matteo Aleman gives us in *Guzman Alfarache* a hero who is successively beggar, swindler, student, and galley-slave, and is said to have suggested to Le Sage the idea of "Gil Blas." The "Arcadia" of Sir Philip Sydney blends pastoral with chivalrous manners, and marks the transition to the romances of conventional love and metaphysical gallantry. In the 17th century prose fiction in most of its leading types had become an established form of literature in the principal languages of Europe.

The full-fledged modern English novel may be said to date from Defoe. The effect of his "Robinson Crusoe," "Colonel Jack," "Moll Flanders," etc., is caused by the delineation and skillful combination of practical details, which give to the adventures the force of realities. The novel of everyday life was further improved by Richardson, Fielding, and Smollett. The "Tristram Shandy" of Sterne displays admirable character painting, and humor deeper and finer in quality than that of his contemporaries. Next appeared Goldsmith's "Vicar of Wakefield," which possesses a higher moral tone than any that had preceded it. Among the best works of secondary rank may be mentioned Johnson's "Rasselas," Madame D'Arblay's "Evelina," and Beckford's "Vathek."

Tales of terror and the supernatural for a time held sway, as exemplified in the romances of Mrs. Radcliffe, author of "The Mysteries of Udolpho"; M. G. Lewis's "The Monk," and Maturin's "Melmoth." A return to stricter realism is manifested in Miss Edgeworth and Miss Austen, who describe domestic life with minuteness, good sense, a clear moral aim, and charming simplicity of style.

In France, among the novels treating of social life in the 18th century the most prominent are the "Life of Marianne" and the "Successful Peasant" of Marivaux, "Manon l'Escaut" by the Abbé Prévost, the "New Héloise," and the "Emile" of Rousseau, containing the author's theories of love, education, religion, and society. In the department of humorous and satirical fiction the palm belongs to Le Sage, author of "Gil Blas," the "Lame Devil," etc. As a writer of satirical fiction Voltaire is entitled to high rank by his "Candide," "Zadig," "Princess of Babylon," etc. The translation of the "Arabian Nights' Entertainments" by Galland (1704-1717) revived the taste for the exaggerations of Eastern fiction. In Germany three great names tower above all others—Wieland; Jean Paul Richter, whose works abound in strokes of humor, pathos, and fancy; and Goethe, whose novels are attempts to represent or solve the great problems of life and destiny. Popular romantic legendary tales (Volksmärchen) constitute a special department of German literature, which was successfully cultivated by Ludwig Tieck, De la Motte Fouqué, Chamisso, Clemens Brentano, Zschokke, Hoffmann, Musäus, and others.

In entering on the 19th century the first name met with is that of the author of "Waverley." Sir Walter Scott may be said to have created the modern historical novel. Since his day the British novelists are perhaps the most numerous class in the list of authors; and among the more prominent we may note Galt, Charles Lever, Mrs. Gore, Disraeli, Bulwer-Lytton, Dickens, Thackeray, James, Ainsworth, the sisters Brontë, Mrs. Trollope, Anthony Trollope, Mrs. Craik, Kingsley, Marryat, George Eliot, Wilkie Collins, Miss Braddon, Mrs. Oliphant, Miss Thackeray, Miss Yonge, Thomas Hughes, Charles Reade, William Black, Thomas Hardy, Richard Blackmore, Walter Besant, W. E. Norris, James Payn, Clark Russell, Rider Haggard, R. L. Stevenson, George Meredith, Hall Caine, James M. Barrie, A. Conan Doyle, Maurice Hewlett, H. G. Wells, Arnold Bennett, Compton McKenzie, John Galsworthy, J. D. Bensford, and W. L. George. In the United States it was not till after the Revolutionary War that the earliest attempts in prose fiction were made. The first notable adventurer in this field was Charles Brockden Brown, who was followed by J. Fenimore Cooper, Washington Irving, Edgar A. Poe, Nathaniel Hawthorne, Harriet Beecher Stowe, and Oliver Wendell Holmes. After these came a younger, and in some respects a more markedly American school, represented by such names as Bret Harte, Henry James, W. D. Howells, E. P. Roe, Amelia Barr, Gen. Lew. Wallace, Cable, Crawford, Frances Hodgson Burnett, Winston Churchill, P. L. Ford,

Miss Murfree (Charles Egbert Craddock). Henry Harland, Robert Chambers, Constance Woolson, Mary Wilkins, Thomas N. Page, Mary Hartwell Catherwood, Booth Tarkington, Edith Wharton, Theodore Dreiser, James Lane Allen, and many others.

The most celebrated of the French novelists of the 19th century are Madame de Staël, Chateaubriand, Victor Hugo, Dumas (father and son), Balzac, Alphonse Karr, Stendhal, De Maupassant, George Sand, Feuillet, Prosper Mérimée, Edmond About, Erckmann-Chatrian, Gautier, Zola, Daudet, etc. The more noteworthy names in the German literature of fiction are those of Gutzkow, Wilibald Alexis (Wilhelm Häring), Hackländer, Spielhagen, Gottfried and Johanna Kinkel, Auerbach, Rodenberg, G. zu Putlitz, Gustav Freytag, Paul Heyse, Georg Ebers, Rosegger, etc. Among the most important novels in other languages are those in the Italian by Manzoni, in Danish by Hans Christian Andersen, in Swedish by Frederika Bremer, and Madame Carlen, in Hungarian by Maurus Jokái, in Russian by Ivan Tourguenieff, Tolstoï and Dostoievsky, in Polish by Sienkiewicz, in Spanish by Valdés, Bazan, and Galdós.

NOVEMBER, the 11th month of the year. Among the Romans it was the 9th month at the time when the year consisted of 10 months, and then contained 30 days. It subsequently was made to contain only 29, but Julius Cæsar gave it 31; and in the reign of Augustus the number was restored to 30, which number it has since retained. Its festivals are All Saints (1), St. Hubert (3), St. Martin (11), St. Catherine (25), and St. Andrew (30).

NOVGOROD, a city of Russia; capital of a province; on the Volkhof. It is the cradle of Russian history. In 864, according to tradition, Rurik (a Varangian, apparently a Scandinavian), was invited there by the neighboring tribes, and from him begins the history of the country. As early as the 12th century it had become the market of N. E. Europe, was called Novgorod the Great, and had 400,000 inhabitants. Its government was a sort of republic. The greatness of Novgorod provoked the jealousy of the princes of Moscow, and in 1471 the Czar Ivan III. nearly destroyed the town, bereft it of its liberties, and exiled the most influential citizens; and when Archangel was opened for English trading-vessels, but especially after the foundation of St. Petersburg, its trade fell away, and the town rapidly declined.

There is considerable trade in corn, flax, and hemp, but few manufactures. Pop. about 28,000.

NOVI, a town of Italy, 30 miles N. W. of Genoa. Here in 1799 the French were defeated (Aug. 15), and victorious (Nov. 6).

NOVIBAZAR, or **NOVIPAZAR**, a town of Serbia on the Rashka river. In the town and vicinity are many ruins. Under the Turkish rule the city was a capital of a sanjak of the same name. It was given back to Turkey in 1909 as partial compensation for the annexation of Bosnia and Herzegovina, but during the Balkan War it was occupied in 1912 by Serbia and was finally transferred to that country by the treaties following the conclusion of that war. Pop. about 15,000.

NOVOGEORGIEVSK, town and fortress in Poland, situated on the junction of the Bug and Vistula rivers, nine miles N. W. of Warsaw, founded by Charles XII. of Sweden. Later it was enlarged by Napoleon. In 1813 it was taken over by Russia. It was the scene of much heavy fighting during the World War, before the fall of Warsaw.

NOVOROSSISK, a city of Russia, a province of the Caucasus. It is a seaport, and prior to the World War carried on extensive trade in grain and naphtha. Pop. about 60,000.

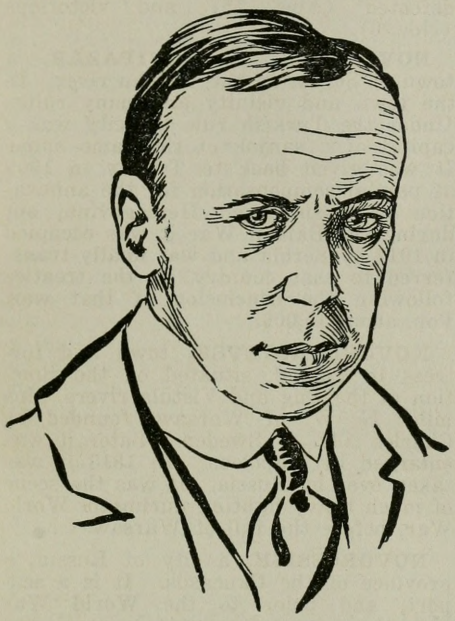
NOVO-TCHERKASK, a city of Russia, the capital of the territory of the Don Cossacks. It is situated on the right bank of the Don river. It has many important educational institutions. Prior to the war distilling was the chief industry. There are important anthracite coal mines near the town. Pop. about 67,000.

NOWANAGAR, a city of India, the capital of the state of the same name. Its chief industries are pearl fisheries and the manufacturing of cloth, silk, dye goods, and oils. It has a considerable trade. Pop. about 50,000.

NOX, or **NYX**, in classical mythology, the goddess of night.

NOYES, ALFRED, English poet and writer; born in Staffordshire, Sept. 16, 1880. Educated at Exeter College, Oxford. Began literary work, devoting himself especially to the study and writing of poetry. Contributed verse and critical articles to the leading English and American reviews. In 1907 he married Gertrude, daughter of Col. B. C. Daniels,

U. S. A. Delivered course of lectures at Lowell Institute in 1913 on the subject of "The Sea in English Poetry." Honored by Yale with the degree of Litt. D. His verse on heroic and patriotic subjects is regarded by the leading critics as among the best of his generation. His



ALFRED NOYES

published works are: "The Loom of Years" (1902); "The Flower of Old Japan" (1903—verse); "Forest of Wild Thyme" (1905); "Drake" (1908—an English epic). He wrote a life of William Morris, for "English Men of Letters" series (1908); "Collected Poems" (1910); "Robin Hood" (1912); "Tales of the Mermaid Tavern" (1912); "The Wine Press and Roda" (1914); A Belgian Christmas Eve" (1915); "A Salute to the Fleet"; "The New Morning" (1918); edited "The Magic Casement" (1908); and "Book of Princeton Verse" (1916).

NOYES, ARTHUR AMOS, American chemist; born at Newburyport, Mass., 1866. Graduated at Massachusetts Institute of Technology, 1886; studied at University of Leipsic (Ph. D. 1890), instructor 1890-1894; associate professor 1894-1899; professor of theoretical chemistry after 1899; director of research laboratory of physical chemistry, 1903-1907; after 1909 acting president. His researches have supplied most of our knowledge on the subject of physical chemistry. Edited "Review of American Chemical Research," 1895-1901; President American Chemical Society, 1904. His books include: "Course of Instruction in Quantitative Chemical Analysis of Inorganic Substances" (1895); "General Principles of Physical Science" (1902); "Electrical Conductivity of Aqueous Solutions" (1907); "Common Principles of Chemistry" (1916).

NOYON, a town of France; department of Oise, 67 miles N. N. E. of Paris. It has a fine cathedral in the Transition style of the 12th century, a city hall (1485-1523), and a former episcopal palace. The Noviodunum of Cæsar, Noyon was a residence of Charlemagne and Hugo Capet, and the birthplace of Calvin. The town suffered during the World War 1914-1918, being fought over and alternately occupied by Germans and Allies. It was finally recaptured by the French, Aug. 28-29, 1918. Pop. about 7,500.

NUBIA, a large region of Africa, formerly a portion of Ethiopia, and extending on both sides of the Nile from Egypt to Abyssinia; touching the Red Sea on the E. and the desert on the W. Nubia proper, or Lower Nubia, extends from Assuan on the Egyptian frontier to Dongola; beyond that is Upper Nubia. But of late the name of Egyptian Sudan has come to be used for Nubia in its widest sense, together with the once Egyptian territory actually in the Sudan, and the equatorial provinces. Under the Pharaohs Nubia was called Cush, but under the 20th dynasty it was recovered by a series of native rulers, who adopted the civilization of the Egyptians, and at a later date were Christianized. At present the country is occupied by Arabs mixed with Nilotic and Negro blood, mainly in Upper Nubia; Ababdeh and Bisharin between the Nile and the Red Sea; and Nubas and Barabira in Lower Nubia. The Semitic Arabs are comparatively recent intruders to this region. They entered Nubia after occupying Egypt in the 7th century, but were resisted by the Christian Dongolawi kings till the 14th century, when the Arabs, assisted by a large contingent of Bosnians, became masters of the land. The various tribes, most of them active and warlike, are Moslems by faith, and till 1820 were ruled by their own chiefs. In that year Ismail Pasha made Nubia an Egyptian territory; and till 1881 it shared the fate of Egypt. Both in its lower and upper sections Nubia is for the most part an expanse of steppes or rocky desert, with patches where grass sometimes grows. There are also

wells and small oases here and there, as on the chief caravan routes. The great "Nubian Desert" lies E. of the Nile, opposite the great W. bend of the river. Below Khartum rain is almost unknown. The only exception to the general aridity is the narrow strip of country on both sides of the Nile.

NUBLE, province of Chile, inland, bordering on Lenares and Concepcion. Capital, Chillan. Is in part on the slope of the Andes and in part in the fertile valley of Chile. Produces wheat, timber, and has considerable live stock. Vine is largely cultivated. Area, 3,407 square miles. Pop. about 200,000.

NUEVA CACERES, capital of province of Ambos Camarines, Philippines, 11 miles S. of Bay of San Miguel, on the Naja river. Has cathedral, episcopal palace, normal school, seminary, and other fine buildings. Steamers ply between it and Manila, 145 miles away. Founded 1578. Name also of town on Cebu Island. Pop. about 20,000.

NUEVA ÉCIJA, province of Luzon, Philippine Islands. Is mountainous, with dense woods, fertile, producing rice, tobacco, sugar, palay and coffee. Cattle raising is the principal industry. Watered by rivers tributary to the Pampanga, on which steamers ply. Capital, San Isidro. Pop. about 150,000.

NUEVA ESPARTA, state of Venezuela, of which the Caribbean island, Margarita, and other islands were constituted in 1901, though since 1904 forms part of Federal district. Consists of two mountainous portions, united by low isthmus. Interior produces maize, sugar, bananas, cotton. Salt and fishing active. Capital, Asunción. Pop. 50,000.

NUEVA VIZCAYA, central province of northern Luzon, Philippine Islands. Valley fertile in rice and tobacco, while domestic animals are raised in the mountainous districts. Tributaries of the Rio Grande de Cagayan water valleys, and there is considerable boat traffic. Pop. about 150,000.

NUGENT, JOHN F., United States Senator from Idaho; born in 1868 and began the practice of law at Silver City, Idaho, in 1898. He became chairman of the Democratic State Committee in 1912 and was appointed a member of the United States Senate by Governor Alexander on Jan. 22, 1918, to fill out the unexpired term of the late Senator Brady.

NULLIFICATION, in American politics, the doctrine formerly held by the extreme States' Rights party, of the right of a State to declare a law of Congress unconstitutional and void, and if the Federal government attempted to enforce it, to withdraw from the Union. As an instance, in 1832, during the presidency of Andrew Jackson, the free trade and States' Rights party in South Carolina, under the leadership of John C. Calhoun, her senator in Congress, asserted the doctrine of nullification in a State convention which declared the tariff acts of that year unconstitutional, and therefore null and void; that the duties should not be paid; and that any attempt on the part of the general government to enforce their payment would cause the withdrawal of South Carolina from the Union and the establishment of an independent government. President Jackson met this declaration with a vigorous proclamation, in which he declared that the laws must be executed, and that "the Union must and shall be preserved." South Carolina, standing alone, receded from her position under protest, and a "Compromise Bill," introduced by Henry Clay in 1833, providing for a gradual reduction of duties, for the time settled the controversy.

NUMA POMPILIUS, the second King of Rome; said to have reigned from 714 to 672 B. C. He was of Sabine origin, and was distinguished as a philosopher and legislator. He was regarded as the founder of the most important religious institutions of the Romans, and left writings explanatory of his system, which were burnt by order of the senate when accidentally discovered 400 years after his time.

NUMBER, in grammar, that distinctive form given to a word according as it is intended to express or is spoken of one individual or several individuals. In English there are two numbers: the singular, which denotes one, or a single individual; the plural, which is used when two or more individuals are spoken of. In Greek, Sanskrit, and a few other languages, a third number was used, called the dual, when only two individuals are spoken of. In the oldest English a dual number existed in the case of pronouns. In phrenology, the name given by Combe to one of the perceptive faculties, the seat of which is placed by Spurzheim just above the external angle of each eye. It is supposed to give facility in arithmetical operations, and is called the organ of calculation.

NUMBERS, one of the books of the Old Testament. It spans a period of nearly 39 years, commencing with the second year of the wanderings, the second month, and the first day, and terminating in the 40th year. The Jews and

the Christians of early and mediæval times implicitly believed in the Mosaic authorship of Numbers. Modern rationalists resolve the book into different portions, assigning each to a separate writer.

NUMIDIA, the name given by the Romans to a part of the N. coast of Africa, corresponding to some extent with the modern Algiers, and lying between Mauretania and the Roman province of Africa; on the S. it reached to the chains of Mount Atlas. The inhabitants of Numidia, as of Mauretania, belonged to the race from which the modern Berbers are descended. They were a warlike race, and excelled as horsemen, but were proverbially faithless and unscrupulous. Of their tribes the Massyli in the E. and the Massaœsyli in the W. were the most powerful. In the grand struggle betwen the Carthaginians and the Romans they at first fought on the side of the former, but subsequently the king of the Eastern Numidians, Massinissa, joined the Romans, and rendered them effectual service in the war with Hannibal. Favored by the conquerors, he united all Numidia under his sway. Of his successors in this kingdom Jugurtha and Juba are the most famous. After the victory of Cæsar over Juba I. in the African war Numidia became a Roman province (46 B. C.); but Augustus afterward gave the W. part, with Mauretania, to Juba II., and the name Numidia became limited to the E. part. For the modern history of Numidia, see ALGIERS.

NUMISMATICS, the science and study of the coins of all nations. In the wider though less accurate, acceptation of the term it includes also that of medals, both artistic and historical. The various branches of numismatics are (1) Greek, Phœnician, etc.; (2) Roman and Byzantine; (3) Mediæval and Modern; and (4) Oriental. The chief value of numismatics consists in the light which coins throw on history.

NUN, a virgin or widow who has consecrated herself to the service of God by the three vows of poverty, chastity, and obedience, and bound herself to live in a religious house under a certain rule. The first authentic notice of nuns is that by St. Anthony, who, when retiring from the world, placed his sister in a house of virgins. St. Augustin, of Hippo, and St. Scholastica, sister of St. Benedict, both founded nunneries, and all the great orders of men have orders of women affiliated to them or following their rule as closely as difference of sex will permit. Communities founded since the Council of Trent mostly follow the rule of St. Augustin, with certain modifications. Also a name given to a variety of pigeon, having its head almost covered with a veil of feathers; a name sometimes given to the smew. Also the blue titmouse.

NUNC DIMITTIS ("now thou lettest depart"), the first two words of the Latin version of the canticle of Simeon given in Luke ii: 29-32, and used as the designation of the whole canticle, which forms part of the evening service in the Book of Common Prayer.

NUNEATON, a market town of Warwickshire, England, on the Anker river and the Coventry canal; 22 miles E. of Birmingham. It has a good Gothic parish church, some remains of a 12th-century nunnery, with a modern church built thereon, and a grammar school (1553). The ribbon manufacture has given place to worsted, cotton, and woolen spinning. "George Eliot," born at Griff, 2 miles to the S., went to school at Nuneaton, and here witnessed the riot described in "Felix Holt."

NUR ED-DIN MAHMUD, or MALEK AL-ADEL, emir and Sultan of Syria; born in Damascus, Turkey, in 1117. His father, Omad ed-Din Zenghi, originally governor of Mosul and Diarbekir under the Seljuk sultans, had established his independence, and extended his authority over northern Syria. Nur ed-Din Mahmud succeeded him in 1145, and changed the seat of government from Mosul to Aleppo. From this time onward his life was one long duel with the Christians—the Crusaders, Hospitallers, Templars, and Knights of the Latin kingdom of Jerusalem. The most notable incidents in this contest may be briefly summarized. Count Joscelin, in an attempt to recover his capital, Edessa, was signally defeated. This gave occasion to the second Crusade. The Crusaders were, however, foiled by Nur ed-Din before Damascus, and, defeated in a number of conflicts, abandoned their enterprise. The emir next conquered Tripolis and Antioch, and before 1151 all the Christian strongholds in Syria were in Nur ed-Din's hands. He next took possession of Damascus in 1153. In 1157 the Christian orders suffered a severe defeat near Paneas, but in 1159 regained some lost territories. Nur ed-Din soon won back what had been taken from him, and turned his attention to Egypt. In 1168 his brother, Asad al-Din Shirkoh, overran Egypt, but, dying soon afterward, was succeeded by his nephew, the celebrated Saladin, who completed the conquest of the country, and restored the Sunnite faith. This won for Nur ed-

Din the gratitude of the Caliph of Bagdad, who created him Sultan of Syria and Egypt. Nur ed-Din, however, grew jealous of his able young lieutenant, and was preparing to march into Egypt in person, when he died in Damascus in May, 1173.

NUREMBERG, a city in the Bavarian province of Middle Franconia, Germany; on the Pegnitz river; 95 miles N. by W. of Munich. It is the quaintest and most interesting town of Germany, on account of the wealth of its mediæval architecture. The Burg or royal palace, built (1024-1158) by Conrad II. and Frederick Barbarossa, is rich in paintings and wood-carvings. Among eight fine churches the two finest are St. Lawrence (1274-1477), with two noble towers 233 feet high, exquisite stained glass, the famous stone tabernacle (1495-1500) by Adam Krafft, and the wood-carvings of Veit Stoss; and St. Sebald's (1225-1377), with the superb shrine of Peter Vischer. Other noteworthy objects are the Italian Renaissance town hall (1622); the new law courts (1877); the gymnasium, founded by Melanchthon (1526); the Germanic museum (1852); Albert Dürer's house; and the statues of him, Hans Sachs, and Melanchthon, with the "Victoria" or Soldiers' monument (1876). Nuremberg wares include specialties of metal, wood, and bone carvings, and dolls, and about 200 factories produce chemicals, ultramarine, type, lead-pencils, beer, etc., and the town besides does a vast export trade in hops.

First heard of in 1050, Nuremberg was raised to the rank of a free imperial city by Frederick II. in 1219. In 1417 the Hohenzollerns sold all their rights to the magistracy. This put an end to the feuds which had hitherto raged between the burgrave and the municipality; and Nuremberg for a time became the chief home in Germany of the arts and of inventions—watches or "Nuremberg eggs," air-guns, globes, etc. In consequence of disputes in the latter part of the 18th century with Prussia, it entered into the Rhenish Confederation, and in 1806 was transferred to Bavaria. Pop. (1916) 330,142.

NUT, the name popularly given to the roundish fruit of certain trees and shrubs, consisting of a hard shell inclosing a kernel; as, a walnut, a cocoanut, a hazelnut, etc. In the United States, as in England, the name nut, without distinctive prefix, is commonly given to the hazelnut, but in France to the walnut. In mechanism, a short internal screw, which acts in the head of an external screw. and is employed to fasten anything that may become between it and a flange on the bottom of the external screw or bolt. A piece of metal with a cylindrical grooved hole, screwed upon the end of a screw bolt. In nautics, a projecting nozzle on each side of the shank of an anchor, to hold the stock firmly in its place.

NUTCRACKER, in ornithology, the genus *Nucifraga*, and especially *N. caryocatactes*, common in southern Europe, a visitor to the N. portions of the Continent; flocks have been seen in Switzerland. They feed on the seeds of pine and beech, and on nuts, which they fix in some convenient crevice and hammer with the beak till the kernel is exposed. The plumage is of different shades of brown, studded with long white spots. Clark's nutcracker is *N. columbiana*.

NUT HATCH, in ornithology, *Sitta Europæa*, a well-known bird; the upper parts delicate bluish-gray, throat white, under parts reddish brown, rich chestnut on flanks. It is extremely shy. The bill is wedge-shaped; in habits it resembles the creeper, but has the power of descending the trunk of a tree head downward, which the latter bird never does. The nut hatch is insectivorous, using its bill to pry off the bark to get at the insects underneath.

NUTLEY, a town of New Jersey, in Essex co. It is on the Morris Canal and the Erie railroad. It is almost entirely a residential suburb of New York and has many fine private residences. Its chief industries are the manufacture of paper and wool. It has the Nutley School, a public library, and a high school. Pop. (1910) 6,009; (1920) 9,421.

NUTMEG, the kernel of the fruit of *Myristica moschata* or *fragrans*. This fruit is a nearly spherical drupe of the size and somewhat of the shape of a small pear. The fleshy part is of a yellowish color without, almost white within. The nut is oval, the shell very hard and dark-brown. This immediately envelops the kernel, which is the nutmeg as commonly sold in the shops. The tree producing this fruit grows principally in the islands of Banda in the East Indies, and had been introduced into Sumatra, India, Brazil, and the West Indies. It reaches the height of 20 or 30 feet. The nutmeg is an aromatic, stimulating in its nature, possessing narcotic properties.

NUTRITION, in animal physiology, the function exercised in the growth and development of the body. The blood in the capillaries is the source from which all the tissues derive their nutrition, the

materials for it being prepared in the blood; then each individual part by a process of cell growth carries on the work. In vegetable physiology, it consists of seven processes: absorption, circulation, respiration, transpiration, excretion, assimilation, and growth. The nutrient substances—some of them essential and all of them useful—are carbon, oxygen, nitrogen, hydrogen, sulphur, iron, calcium, potassium, magnesium, phosphorus, sodium and chlorine.

NUX VOMICA, the seeds of *Strychnos nux vomica*. They contain two alkaloids, strychnia and brucia, with a peculiar acid. Nux vomica has been used in dyspepsia, in some kinds of paralysis, in debility after rheumatic fever, etc. In overdoses the strychnia which it contains produces tetanus.

NYACK, a village of New York in Rockland co., on the west bank of the Hudson river, opposite Tarrytown. It is on the Erie, the New York, Ontario and Western, and the West Shore railroads. It is connected with Tarrytown by ferry. It is an attractive residential community and is also an important industrial section, including yacht and boat building, shoes, sewing machines, carriages, etc.

NYANGWE, an Arab trading station on the upper Kongo or Lualaba, at the edge of the Manyema country; in lat. 4° 20′ S. From that point Stanley began the descent of the Lualaba in 1876.

NYANZA, an African word meaning lake, and especially applied to three bodies of water lying in the equatorial region of Africa. Of these the first was discovered in 1858 by Captain Speke, and by him named Victoria Nyanza. It is almost circular in form; 180 miles in diameter; has an area of 27,000 square miles; and is, with the exception of Lake Superior, the largest fresh water lake in the world. The second lake was discovered by Sir Samuel Baker in 1864, named Albert Nyanza, and forms a part of the course of the Nile. It is 14 miles long and 40 wide. The Albert Edward Nyanza was discovered by Stanley in 1876 and lies S. W. of Albert Nyanza.

NYASSA, or **NYANJA**, one of the equatorial great lakes of east Africa; about 260 miles S. E. of Tanganyika and 400 inland from the E. coast. It lies at an altitude of 1,570 feet, is very deep in the middle, shelving rapidly from the shores, which are rocky and high. Long and narrow, it measures 350 miles from N. to S. and an average of 40 miles from E. to W. The Shire river emerges at its S. extremity, and goes S. to the Zambezi. The waters of the lake are sweet and abound in edible fish. The lake was known to the Portuguese as Maravi in the 17th century, but Livingston in 1859 first fixed its situation and navigated it.

NYASSALAND PROTECTORATE, since 1907 the name given to a part of British Central Africa, immediately S. W. and N. W. of Lake Nyassa. It is practically the region in which the African Lakes Company of Glasgow carried on operations since its foundation in 1878; it works with the missionaries of the Established and Free Church of Scotland. The original purpose was to counteract the slave dealing of Arab marauders. The area of the Protectorate is 42,217 square miles. Pop. (1916) 731 Europeans, 391 Asiatics, 1,140,000 natives. The principal towns are: Capital, Zomba; Blantyre, and Fort Johnston, the last a port and naval station on Lake Nyassa. Trade in 1917-1918: Imports, £354,373; exports, £156,712. Chief products: coffee, sugar, chinchona, and tobacco. Ivory, tea, and rubber are also exported.

NYBORG, a maritime town in Denmark, on the Great Belt, E. coast of Fyen Island; in the province of Svendborg; 17 miles E. S. E. of Odense; formerly one of the chief citadels of Denmark; its fortifications were destroyed in 1869, and are now a promenade. The town was founded in 1170; several times a royal residence; and the birthplace of Christian II., 1481. The Swedes lost a great battle near the town, Nov. 14, 1659.

NYKÖPING, a seaport of Sweden; on a bay of the Baltic; 62 miles S. W. of Stockholm; manufactures machinery and cotton. The castle, now ruined, ranked in point of strength next to those of Stockholm and Calmar. King Waldemar was imprisoned here after his dethronement in 1288, till his death in 1302. Eric and Waldemar, brothers of King Birger, were left in 1317 to perish of hunger in a dungeon, the keys of which the king threw into the sea. In horror of this deed the people seized the castle and demolished it. In 1719 the town was taken and dismantled by the Russians.

NYMPHS, in Greek mythology, female divinities of inferior rank, inhabiting the sea, streams, groves, meadows and pastures, grottoes, fountains, hills, glens, and trees.

NYSTAGMUS, an involuntary movement of the eyeball due to clonic spasm of the muscles of the globe. It usually affects both eyes. The movement is usually horizontal, *i. e.*, from side to side, but it may be rotary.

O

O, o, the 15th letter, and the 4th vowel of the English alphabet. O is called the labial vowel. In English o has six distinct sounds. (1) The sound of o in not, as in pot. (2) The same sound lengthened by a following r, as in or; and in the digraph ou, as in fought, sought. (3) The sound of o in go; and in the digraphs oe, as in foe, toe; oa, as in groan, moan, boat; and ou in though. This sound is modified by r following the vowel, as in more. (4) The sound of o in who, move, tomb; and in the digraphs oo, as in room, soon; and ou, as in through, wound. (5) The sound of u in bull or full, as in wolf, woman. (6) The sound of u in tub, as in son, love, come; and in the digraphs oe, as in does; oo, as in blood; ou, as in enough, tough.

O as a symbol is used:

As a numeral: As the symbol of nothing, or a cipher.

In chemistry for the element oxygen.

In old music as the sign of *tempus perfectum*, or triple time.

O, plural **OES**, an exclamation used in earnest or solemn address, entreaty, appeal, or invocation, and prefixed to the noun of address.

O', in Irish proper names, a patronymic prefix corresponding to the Mac of the Highlands of Scotland; thus O'Connell means "the son of Connell."

OAHU (wä'hö), one of the Hawaiian Islands, between Molokai and Kawai, the most important island of the archipelago, on which is the capital Honolulu; length 37 miles; greatest breadth 25 miles; area, 600 square miles. It is crossed by two mountain chains running parallel N. W. to S. E., between which is a large dry plain now only useful as pasture land; formerly, when irrigated, more fertile. Highest point Kaala, altitude 3,890 feet.

OAJACA, or **OAXACA** (wä-hä'kä), a mountainous state in the S. of Mexico, bordering on the Pacific; area 35,382 square miles; pop. about 1,100,000. The capital, Oajaca, lies 5,060 feet above the sea, in the fertile valley of the Atoyac. It contains a large cathedral (1729), a quaint bishop's palace, the Seminario Tridentino, and the State Institute, with 34 professors. The manufactures are chiefly chocolate, cotton goods, cigars, candles, and soap. Pop. about 35,000.

OAK, any species of the genus *Quercus* and specifically *Q. robur*, the common British oak. It is sometimes 60 to 100 feet high, with a girth of 70 feet. There are two varieties—*sessiliflora*, with sessile, and *pedunculata*, with pedunculated flowers; the latter is the most common in natural woods. Its timber is whitish and hard, that of the other reddish and brittle. The acorns are sometimes used to feed swine. The bark is employed in tanning, and as a coarse kind of febrifuge. Oak sawdust is an ingredient in dyeing a fustian-color, also drab and brown. The decaying leaves produce heat by fermentation. Also the genus *Quercus;* or a species or genera more or less resembling the oak; as, the Australian Casuarina.

OAKLAND, a city and county-seat of Alameda co., Cal.; on San Francisco Bay, and on the Southern Pacific, Western Pacific, and other railroads; 7 miles E. of San Francisco. The city is laid out on a fine slope of ground, overlooking the bay. It received its name from a grove of beautiful evergreen oaks in which it was first settled. Its favorable location has made it the residence of many wealthy families, whose business interests are in San Francisco. It contains a high school, a convent, a private normal school, several academies, a business college, library, St. Mary's College, and other educational institutions, a handsome theater, municipal buildings, Auditorium, parks, hospitals, schools, electric street railroads, and National, State and savings banks. It is the trade center of a large and fertile fruit-grow-

ing region. The city has industries in flour, pottery, brass goods, leather, canning and fruit-packing, shipbuilding, metallurgical works, cordage and jute, and smelting. The assessed valuation exceeds $250,000,000. Pop. (1910) 150,174; (1920) 216,361.

OAKLEY, VIOLET, American painter and designer; born in New York, 1874. Studied at Art Students' League, Penn. Academy of Fine Arts, and in Paris under Aman Jean, Collin, and Lazar. First important work was painting 13 panels, illustrating "Founding of the State of Spiritual Liberty," for the Governor's reception room, State Capitol, Harrisburg, Pa. Decorated the churches All Souls and All Saints, New York, the Pennsylvania Academy, and many private residences. Awarded gold medal St. Louis Exposition, 1904. Medal of Honor Panama-Pacific Exposition, 1915.

OAK PARK, a village of Illinois, in Cook co., 9 miles W. of Chicago. It is situated on the Chicago and Northwestern railroad. It is a residential suburb of Chicago and contains the Scoville Institute and several other important public buildings. Pop. (1910) 19,444; (1920) 39,858.

OASES, fertile spots in a desert, due to the presence of wells or of underground water supplies. The best known and most historically famous are those of the Libyan Desert and the Sahara; they occur also in the deserts of Arabia and Persia, and in the Gobi. The French have created many oases in the Algerian deserts by sinking ARTESIAN WELLS (*q. v.*). The chief vegetation of the African oases is palms—especially date and doom palms; with barley, rice, and millet, when the fertile area is large enough to admit of settled occupation. In the Libyan Desert are the oases of Síwa (where was the temple of Jupiter Ammon); in the N., Farafa, Bahríya, and Khargeh (the *oasis magna,* 120 miles W. of Thebes). In the western Sahara, Tuat, 1,000 miles S. W. of Tripoli, is the best known; in the eastern Sahara are Fezzan, Gadames, Bilma and Aïr or Asben. See DESERT.

OAT, or **OATS** (*Avena*), a genus of edible grasses cultivated extensively in all temperate climates, and though principally grown as food for horses largely used as human food. There are about 60 species, the principal of which are *A. satīva* (the common oat), *A. nuda* (naked oat, pilcorn, or peelcorn), *A. orientalis* (Tartarian or Hungarian oat), *A. brevis* (short oat), *A. strigosa* (bristle-pointed oat), *A. chinensis* (Chinese oat), etc. The weight per bushel varies from 32 lbs. (U. S.) to 40 lbs. (Europe); the meal is about half the weight of the oats. The wild oat (*A. fatua*) is supposed to be the original of all the species, but its native country is unknown. In the calendar year 1918 the oat crop of the United States aggregated 1,538,359,000 bushels. See OATMEAL.

OATES, TITUS, an English impostor; son of a ribbon weaver; born in Oakham, England, in 1649. He took orders in the Church of England, and held benefices in Kent and Sussex; became afterward chaplain in the navy and was discharged for misconduct; turned Roman Catholic, and resided for some time at the Jesuit College of Valladolid and St. Omar, but was finally, in 1678, dismissed for repeated misdemeanors. He returned to England and concocted the story of the famous Popish Plot. In the public excitement created by the story several eminent Catholics were executed, while Titus Oates was lodged handsomely in Whitehall, with a pension of $4,500 from Parliament. After the execution of Strafford, there was a revulsion of public opinion. He was convicted of perjury, sentenced to be pilloried five times a year, whipped from Aldgate to Newgate, and imprisoned for life. On the accession of William and Mary he was freed, enjoying an ill-deserved pension of $1,500 a year. He died in London, England, July 12, 1705.

OATH, a solemn affirmation or declaration made with an appeal to God for the truth of what is affirmed. By the appeal to the Supreme Being, the person making oath is understood to invoke His vengeance if that which is affirmed or declared is false; or, in case of a promissory oath, if the promise or obligation is willfully broken. Oaths are of two kinds: (1) Assertory oaths, or those oaths by which the truth of a statement is affirmed; as an oath sworn to the truth of an affidavit; (2) promissory oaths, or those oaths by which something is promised, or an obligation is assumed; as, the oaths of witnesses; the oath of allegiance, by which the person taking the oath promises allegiance to the government. Modern legislation has also provided particular forms of oaths, having permitted affirmations to be made by persons who have conscientious objections to take an oath. Witnesses are allowed to swear to the truth of their evidence in any way which is binding on their consciences. Also a careless and blasphemous use of the name of the Divine Being, or of anything divine or sacred, either by way of appeal or im-

precation, or as a profane exclamation or ejaculation. Ex officio oath, in old English law, an oath whereby any person was obliged to make any presentment of any crime or offense, or to confess or accuse himself or herself of any criminal matter or thing, whereby he or she might be liable to any censure, penalty, or punishment whatsoever.

OATMEAL, panic-grass; a plant of the genus *Panicum*. Also the meal of the oat deprived of its husk. It is one of the most important and valuable articles of food, containing a greater proportion of proteine compounds than the finest wheaten flour. An analysis of a sample of oatmeal gave 13 per cent. of nitrogenous material, 60-70 per cent. of heat givers, and 3 per cent. of mineral matter.

OAXACA. See OAJACA.

OB, or OBI, the great river of western Siberia, rising in two branches, the Biya and the Katun (both of which have their origin in the Altai Mountains, within the frontier of the Chinese dominions) and flowing N. W. and N. for 2,300 miles to the great Gulf of Ob in the Arctic Ocean. Its chief tributaries are the Irtish, Tcharysh, Tom, and Tchulym, all navigable. On the banks of the Ob are Barnaul, Tomsk, and Narym. At present only a few steamers ply on the great water-system of the Ob, which nevertheless seems destined to become a great commercial thoroughfare.

OBADIAH ("servant of God"), the name of various persons mentioned in the Old Testament. Also the fourth of the minor prophetic books.

OBALDIA, JOSÉ DOMINGO, sometime President of Panama; born at David, province of Chiriqui, 1845, son of a former president of Colombia. Educated at College of Bogota. Elected to Colombian Congress, 1900. A Senator in 1902, he was the only member of the House to favor ratification of the Hay-Herran Treaty, resigned, and was soon appointed Governor of province of Panama. Joined the revolution of 1903, and became second Vice-President of the new Panama Republic. Minister to United States, and member of governing board Pan-American Union, 1906. President of Panama, 1908. Served capably until his death in 1910.

OBAN, a fashionable watering-place of Argyllshire, Scotland, 84 miles W. N. W. of Stirling, and 136 of Edinburgh. It is the great tourist headquarters of the West Highlands. Objects of interest are the picturesque ruins of Dunolly and Dunstaffnage Castles, and a prehistoric cave-dwelling, discovered in 1890. Pop. (1916) 5,600.

OBEID, EL, capital of Kordofan, in the Sudan, 220 miles S. W. of Khartum. It consists of a number of villages, originally separate and inhabited by distinct races, but now joined together into one town. Gum-arabic, ivory, gold, and ostrich feathers are the chief articles of trade. Near this place, in 1883, a force of Egyptians under Hicks Pasha, with an English staff, was exterminated by a large army of the Mahdi.

OBELISK, in printing and writing, in its Latin sense, a sign like a sharp-pointed spear (!) with which doubtful passages were marked, or references made to notes in the margin, or at the foot of a page; a dagger.

In architecture, a quadrangular, slender stone shaft, with a pyramidal apex. The width of the base is usually about one-tenth of the height, and the pyramidal apex has about one-tenth of the whole length. Obelisks were commonly formed from a single stone, mostly of granite. Obelisks were erected in pairs, and many still exist on the ancient sites, while others have been removed and set up elsewhere.

The obelisk was the Egyptian symbol of the supreme God. The Arabians called them Pharaoh's needles, and the Egyptian priests the fingers of the sun. The first obelisk is said to have been erected by Rameses, King of Egypt, in the time of the Trojan war; it was 40 cubits high, and employed 20,000 men in building. There are about a dozen Egyptian obelisks erected in Rome. One was erected by the Emperor Augustus in the Campus Martius, on the pavement of which was a horizontal dial that marked the hour, about 14 B. C. Of the obelisks brought to Rome by the emperors, several have been restored and set up by various Popes. The largest is that from Heliopolis. It is of granite, and now stands before the N. portico of the Church of St. John Lateran, where it was erected in 1588. Its whole height is about 149 feet; without the base, 105 feet. It was removed to Alexandria by Constantine, and to Rome by his son Constantius, and placed in the Circus Maximus. The obelisk at Luxor was presented to the French nation, in 1820, by Mehemet Ali, and was re-erected in Paris in 1833. Its height is 73 feet. The obelisk presented to the English nation was removed to England and set up on the Thames Embankment in London. Of Egyptian obelisks 42 are known, some broken; 12 at Rome; 1, from Luxor, set

up in the Place de la Concorde, Paris, October, 1836; 5 in England; 1 in Central Park, New York. The obelisks improperly named "Cleopatra's Needles" were erected by Thothmes III. at On (Heliopolis), about 1600 B. C. One was removed to Alexandria by Augusta, about 23 B. C.

The Washington obelisk at Washington is 555 feet high, and was dedicated Feb. 22, 1885. The Bunker Hill Monument may also be properly called an obelisk, and that with the Washington are the two most famous of American construction.

OBER, FREDERICK ALBION, an American ornithologist, traveler, and author; born in Beverly, Mass., Feb. 13, 1849. He traveled extensively in Florida, the West Indies, Mexico, Spain, North Africa, and South America, and wrote: "Camps in the Caribbees" (1880); "The Silver City" (1883); "Young Folks' History of Mexico" (1883); "Montezuma's Gold Mines" (1887); "In the Wake of Columbus" (1893); "Knockabout Club Series," "Under the Cuban Flag" (1896); "My Spanish Sweetheart" (1897); "The Cacique's Treasure Cave" (1901); "Heroes of American History," 12 vols. (1907). He died in 1916.

OBER-AMMERGAU. See AMMERGAU, OBER and UNTER.

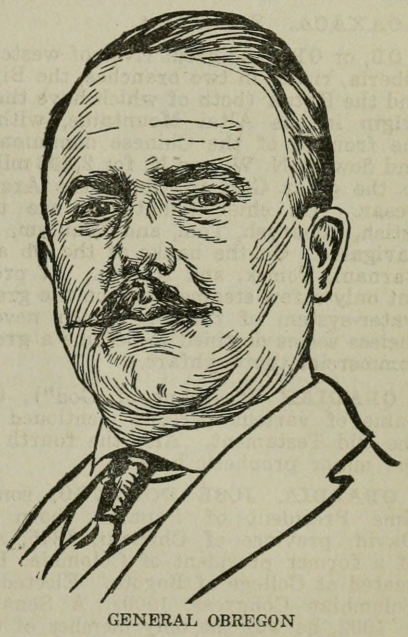
OBERHAUSEN, a city of Prussia in the Rhine province, on the right bank of the Rhine. Prior to the World War it had important industries, including iron foundries, rolling mills, chemical works, etc. In the neighborhood are important mines of coal, iron, and zinc. Pop. about 90,000.

OBERLIN, a town in Lorain co., O.; on the Lake Shore and Michigan Southern railroad; 34 miles W. S. W. of Cleveland. Here are the well-known Oberlin College, a school of telegraphy, business college, conservatory of music, National and State banks, electric lights, public and college libraries, and weekly and monthly periodicals.

OBERLIN COLLEGE, a coeducational non-sectarian institution in Oberlin, O., founded in 1833; reported at the close of 1919: Professors and instructors, 175; students, 1,535; volumes in the library, 196,000; productive funds, $7,761,303; income, $540,000; number of graduates, 6,709; president, H. C. King, D. D.

OBOE, a wind instrument of the reed kind, which at a very early date took its place as one of the essential instruments of the orchestra. It consists of a tube, made of box, ebony, or cocoawood, about 21 inches long, narrow at the top, but gradually widening toward the lower end or bell, and divided into three pieces or joints. In the upper and middle ends are holes, by stopping or opening which with the fingers, the natural scale is formed, the intermediate semitones being produced by means of the keys, of which some hautboys have but two, while others have 15, and more. Its range of available notes extends from B to G in alto. The tone of the hautboy is rich and sweet. This term is also given by organ builders to a reed stop similar in shape and sound to the real hautboy.

OBOLUS, in Greek antiquities, a small coin of ancient Greece, originally of copper, afterward of silver, the sixth part of an Attic drachma, and equal to two and one-half cents. Also a small weight,



GENERAL OBREGON

the sixth part of an Attic drachma. In palæontology, a genus of *Lingulidæ* confined to the Silurian period; characteristic of the Lower Silurian.

OBONGO, or **ABONGO**, a tribe of pigmies who live in different parts of French Kongo in west Africa. They are between four and five feet in height, are of a brown color, and have bushy hair which grows over their bodies as well as their heads. They are nomadic, follow fishing and hunting, and build conical grass huts.

OBREGON, ALVARO, a Mexican general, born in 1880 in the state of

Sonora. After he had obtained a scientific education he began his career as a successful farmer in 1902. In 1912 he recruited a force of Yaqui Indians and assisted Madero in gaining control of Mexico. His sympathy with the peons led him to espouse the cause of Carranza against Huerta in 1913, and again with Carranza against Villa in 1915. During these wars Obregon forged to the front as the ablest leader of the Constitutionalist armies, and due to his generalship Villa was defeated and forced into flight as an outlaw. After 1915 he co-operated with Carranza in his effort to pacify Mexico, and finally became a candidate for the Presidency of Mexico to succeed Carranza. Charging that the President was using unfair methods to defeat him in favor of his own candidate, Obregon revolted, and in May, 1920, drove Carranza from the capital. He was elected President of Mexico in October and inaugurated in December, 1920.

O'BRIEN, FITZ-JAMES, an Irish-American author; born in Limerick, Ireland, in 1828. His writings comprise "The Diamond Lens and Other Stories," and many poems. His collected works appeared in 1881. He died of wounds in the Civil War at Cumberland, Md., April 6, 1862.

O'BRIEN, WILLIAM, Irish journalist and politician; born in 1852; educated at Cloyne College and Queen's College, Cork. In 1875 joined staff of "Freeman's Journal," and founded "United Ireland" 1880. Prosecuted nine times for political offenses, he spent over two years in prison. Nationals' parliamentary leader 1883-1895, retiring because of party dissensions. Toured the United States in 1890, collecting funds for Irish cause. Led Anti-Parnellites after leader's conviction. 1898 organized an agrarian movement, United Irish League, and founded "The Irish People" as its organ. Member of Parliament for Cork, 1900-1909. Has published "When We Were Boys" (1890); "Irish Idea" (1894); "A Queen of Men" (1897); "Recollections" (1906); "An Olive Branch" (1910).

OBSERVATORY, a building devoted to the observation of astronomical, magnetic, meteorological, or other natural phenomena. The astronomical observatory is the one of most general interest. Astronomical observation began at an early date in China; the pyramids in Egypt seem in some way to have been associated with stellar observation; and the first historical observatory was founded in Alexandria 300 B. C. Its work was begun by Aristillus, and continued by Timocharis, Hipparchus, Aristarchus, and others. The first European observatory was built at Nuremberg by Bernard Walther in 1472, and this was followed in the 16th century by Tycho Brahe's famous observatory on the island of Hveen, near Copenhagen. These were followed by the construction of the Royal Observatory at Paris (1667), the Greenwich Royal Observatory (1675), the Tusculan Observatory near Copenhagen (1704), Berlin (1705; new observatory 1835), Vienna (1756), Dublin (1785), Königsberg (1813), Sydney (1820), Cape of Good Hope (1820), Edinburgh (1825), Pulkowa near St. Petersburg (1839), Cambridge, Mass. (1839), Washington, D. C. (1845), Melbourne (1853), Lick Observatory, California (1888), and the Yerkes Observatory at Lake Geneva, Wis. (1897).

Dun Echt Observatory, the private observatory of the Earl of Crawford, near Aberdeen, Scotland, has attracted considerable attention as a center of distribution of astronomical telegraphic news, the Dun Echt circulars, in connection with the international code telegrams, being the medium of communication.

The chief instrument used in the observatory is the telescope, whether in the form of the equatorial or in the mural circle and transit instrument, together with the sidereal and the solar clock. In 1919 the Carnegie Institute installed a 100-inch reflector, largest in the world, in their Solar Observatory, Mt. Wilson, Pasadena, Cal. The observatory building must be constructed in a very stable manner, and as the instruments must be out of contact with the walls they are attached to stone pillars that rest on foundations separate from the rest of the building.

OCAÑA, town in department of Santander, Colombia, 60 miles, N. W. of Pamplona. Region is rich in coffee, and is center of anise and hides trade carried on with Venezuela. Pop. about 18,000.

OCCULTATIONS, eclipses, strictly, though the latter term is confined by usage to the obscuration of the sun by the moon, and of the moon by the earth's shadow, while the former is restricted to the eclipses of stars or planets by the moon. Occultations are phenomena of frequent occurrence; they are confined to a belt of the heavens about 10° 17½′ W., situated parallel to, and on both sides of, the equinoctial, and extending to equal distances N. and S. of it, being the belt within which the moon's orbit lies. These phenomena serve as data for the

measurement of the moon's parallax; and they are also occasionally employed in the calculation of longitudes. As the moon moves in her orbit from W. to E., the occultation of a star is made at the moon's E. limb, and the star emerges on the W. limb. When a star is occulted by the dark limb of the moon (a phenomenon which can only occur between new moon and full moon) it appears to an observer as if it were suddenly extinguished, and this appearance is most deceptive when the moon is only a few days old. When an occultation occurs between full moon and new moon, the reappearance of the star at the outer edge of the dark limb produces an equally startling effect.

OCCUPATIONAL, or INDUSTRIAL, DISEASES, diseases arising out of poisons, irritants, and similar causes due to specific conditions of labor. These maladies have been classified by W. G. Thompson in his "Occupational Diseases," into diseases due to irritant substances; those arising from defective surroundings, and special occupational diseases. The diversity of diseases due to what are known as dangerous trades has occupied attention since the great industrial development of the last century revolutionized conditions of labor, and it was soon ascertained that certain maladies regularly arose from certain occupations. Investigations carried on under diversified conditions in many industrial establishments have enabled medical men to arrive on approximate conclusions regarding the probable specific character of the malady to be associated with a given occupation and environment.

Irritant substances play the chief rôle in the propagation of diseases and these are divided by Mr. Thompson into six groups, namely, toxic metals and compounds; toxic gases and vapors; toxic fluids; dusts and fibers; germs; and substances of a general character. Antimony, arsenic, brass, lead, mercury are among the principal toxic metals and their compounds, which inhaled in the process of manufacture as vapor or dust or fume set up physical conditions favorable to certain diseases. Toxic gases rank with the metals as prolific breeders of disease, and the list of the dangerous gases is a very long one. Aniline in coal tar; chlorine in the making of pottery; hydrogen chloride; sulphuric acid; carbon dioxide, called choke damp by miners; hydrofluoric acid; hydrogen sulphide, and zinc and arsenical fumes are some of the gases the absorption of which leads to symptoms of poisoning among workers exposed to their influence. Wood alcohol, which is largely used in many manufacturing processes, has been responsible for many deaths. Its fumes are extensively dangerous and blindness often occurs in cases where it is not fatal. The inhalation of ammonia and ammonium chloride results in cough and bronchitis. Benzine vapor if continually inhaled may result in a prolonged malady. The use of white phosphorus in the making of matches was responsible for a great many fatal maladies, till laws prohibiting its use were passed in Europe. France for example has not had to record a single death from this cause since the year 1897 when the law was passed. Prohibitive taxes are producing a much similar result in the United States.

The dangerous toxic fluids include petroleum, dyes, chinone, chinine, paraffin, tar, metal, and nitroglycerin. This last is a fluid of indeterminate color and it has been noted that those of good constitution who work in it usually acquire immunity. Its chief danger is in its explosive capacity. In regard to dusts and fibers ordinary observation is witness to the obstruction of the respiratory organs, the irritation to eyes, ears, mouth, and mucous membranes which follows the absorption of particles comparatively harmless. As a rule dusts consisting of large particles are liable to cause more lasting injury than the finer kinds of dust, and by their effect on the lungs are likely to set up conditions favorable to tuberculosis. Inquiry has made it clear that this disease among workers engaged in occupations that result in the inhalation of dust is more than twice as prevalent as in other occupations. Workers in asphalt, cement, emery, glass, stones, in mining, and the grinding, cutting, crushing, and polishing of metals, marbles, and stones are among those most liable to suffer from the inhalation of particles. Maladies arising from germs are prevalent in the tanning and wool-sorting trades, and in occupations that keep workers continuously among cattle and horses. To these classes may be added irritants of a general character, outside those here enumerated.

Dangerous surroundings, as Mr. Thompson shows, are responsible for a large number of maladies, and among these harmful conditions of the air lead to obvious symptoms. Workers in mining, tunnels, and caissons are subject to a number of maladies peculiar to their work in compressed or bad air. Occupations which require continued strain, long abstinence from food, and similar abnormalities naturally lead to results which affect the nervous systems as well

as the physical well-being. The lowering of the vitality naturally make the worker less immune to maladies of a general character, and there is hardly an occupation that does not favor conditions that make the individual more susceptible to one form of malady than another among those that mortal flesh is heir to.

OCEAN, the sea, using that term in its widest sense. Properly speaking, there is but one ocean or sea, all the salt water on the globe, with a few trifling exceptions like the Caspian, the Sea of Aral, and the Dead Sea, being more or less in complete communication with each other. Different portions of the ocean have received distinctive names. The Arctic, the Atlantic, the Indian, the Pacific, and the Antarctic oceans, five in all; or if the Atlantic and Pacific be separated into a N. and a S. portion by the equator, then there are seven in all. The unequal heating of portions of the vast expanse of water on the globe, the rotation of the earth, and other causes tend to keep the water in constant circulation and preserve it from being stagnant and impure. The attractions of the moon and sun cause tides. The area of the ocean is about 155,000,000 square miles, or nearly three-fourths of the whole surface of the earth. This space is distributed (in square miles) among the principal seas as follows: Arctic, 5,000,000; Antarctic, 10,000,000; Indian, 20,000,000; Atlantic, 40,000,000; Pacific, 80,000,000. This great volume of water largely modifies the temperature of the adjacent lands, tempering the heat of summer and the cold of winter. As far as observation has yet extended, the average depth of the ocean is somewhat above two miles. At 62° F., the relative density of salt and fresh water is as 1.0275 to 1. The ocean has been salt through all known geological periods. The origin of this saltness is a difficult geological problem. While on land the temperature rises as mines or borings become deeper, the opposite occurs with the ocean. As a rule, the surface water is the warmest. The level of the ocean remains permanent from age to age. It is the land that is upheaved or subsides.

OCEAN GROVE, a city of New Jersey in Monmouth co., 54 miles S. of New York City. It is situated on the Pennsylvania and the Central of New Jersey railroads. It adjoins Asbury Park on the S. It is the locality of the annual camp meeting under the auspices of the Methodist Episcopal Church, and it is controlled largely by the camp-meeting association. There are certain important public buildings, including the Auditorium, postoffice, and school. The permanent population is 2,500, which is increased in the summer months to over 25,000.

OCEANIA, a name sometimes given to the fifth division of the globe, comprising all the islands which intervene between the S. E. shores of the continent of Asia and the W. shores of America. It naturally divides itself into three great sections—the Malay Archipelago, Australasia or Melanesia, and Polynesia.

OCEANUS (-sē'-), in classical mythology, the god of the stream Oceanus, and the offspring of Cœlus and Terra, or Heaven and Earth. He espoused his sister Tethys, and their children were the rivers of the earth, and the 3,000 Oceanides or Nymphs of Ocean.

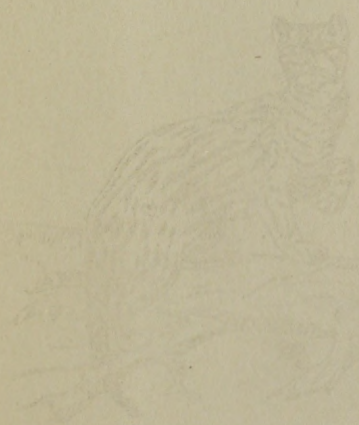
OCELLUS, plural **OCELLI**, in entomology and zoölogy, a spot within a ring of another color, like the pupil within the iris, except that the central spot is often surrounded by additional concentric zones. Example, the ocelli on the tail coverts of the peacock, and those on the wings of the peacock-butterfly. Ocelli, the simple eyes or stemmata of insects, generally situated on the crown of the head between the great compound eyes. Used also of the simple eyes of spiders, crustaceans, mollusks, etc.

OCELOT, *Felis pardalis*. The fur has a tawny reddish ground, marked with black spots, aggregated in spots and blotches. It ranges through the wooded



OCELOT

parts of tropical America, from Arkansas to Paraguay. Length, about four feet, legs short. It destroys a vast number of animals for the sake of sucking the blood. In captivity it is playful and gentle.



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